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STIC Search Report
EIC 1700

STIC Database Tracking Number: 147830

TO: Lynn Hailey
Location: REM 9C18
Art Unit : 1755
March 23, 2005

Case Serial Number: 10/612336

From: Kathleen Fuller
Location: EIC 1700
REMSEN 4B28
Phone: 571/272-2505
Kathleen.Fuller@uspto.gov

Search Notes

sira
Search and Information Resources Administration

STIC Search Results Feedback Form

USPTO

EIC17000

Questions about the scope or the results of the search? Contact ***the EIC searcher or contact***:

Kathleen Fuller, EIC 1700 Team Leader
571/272-2505 REMSEN 4B28

Voluntary Results Feedback Form

- *I am an examiner in Workgroup:* ☐ *Example: 1713*
- *Relevant prior art **found**, search results used as follows:*
  - ☐ 102 rejection
  - ☐ 103 rejection
  - ☐ Cited as being of interest.
  - ☐ Helped examiner better understand the invention.
  - ☐ Helped examiner better understand the state of the art in their technology.

Types of relevant prior art found:

- ☐ Foreign Patent(s)
- ☐ Non-Patent Literature
  (journal articles, conference proceedings, new product announcements etc.)

- *Relevant prior art **not found:***
  - ☐ Results verified the lack of relevant prior art (helped determine patentability).
  - ☐ Results were not useful in determining patentability or understanding the invention.

Comments:

Drop off or send completed forms to EIC1700 REMSEN 4B28

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Search and Information Resources Administration

Mellerson, Kendra

From: Unknown@Unknown.com
Sent: Tuesday, March 15, 2005 2:20 PM
To: STIC-EIC1700
Subject: Generic form response

ResponseHeader=Commercial Database Search Request

AccessDB#= 147830

LogNumber= ______________

Searcher= ______________

SearcherPhone= ______________

SearcherBranch= ______________

MyDate=Tue Mar 15 14:19:07 GMT-0500 (Eastern Standard Time) 2005

submitto=STIC-EIC1700@uspto.gov

Name=Patricia L. Hailey

Empno=69382

Phone=571-272-1369

Artunit=AU 1755

Office=Remsen Bldg., Room 9 C 18

Serialnum=10/612,336

PatClass=502/182

Earliest=July 9, 2002

Format1=paper

Format3=email

Searchtopic=Looking for a method of preparing a non-platinum composite electrocatalyst, comprising preparing (1) a carbon supporting titanium dioxide, and compounding (1) with a transition metal macrocyclic compound to produce a carbon supporting titanium dioxide-transition metal macrocyclic compound (2), and thermally treating the resultant compound (2) at 100-1000 degrees C to produce a composite catalyst.

Comments=Best time to reach my by phone or e-mail is anytime before 5 p.m. Thanks a bunch!

send=SEND

```
=> FILE HCAPLUS
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FILE COVERS 1907 - 22 Mar 2005  VOL 142 ISS 13
FILE LAST UPDATED: 21 Mar 2005  (20050321/ED)

 This file contains CAS Registry Numbers for easy and accurate
 substance identification.


=> D QUE L98
L50        691206 SEA FILE=REGISTRY ABB=ON  ((FE OR CO OR MN OR CU OR ZN)(L)C(L)H
                  )/ELS
L53          3431 SEA FILE=REGISTRY ABB=ON  L50 AND PORPHY?
L56         13609 SEA FILE=REGISTRY ABB=ON  L50 AND PHTHALOCYAN?
L57             0 SEA FILE=REGISTRY ABB=ON  L50 AND SCHIFF?
L58             0 SEA FILE=REGISTRY ABB=ON  SCHIFF? AND (COPPER OR MANGANESE OR
                  ZINC  OR COBALT OR IRON)
L60             1 SEA FILE=REGISTRY ABB=ON  TITANIA/CN
L61             1 SEA FILE=REGISTRY ABB=ON  CARBON/CN
L62         43614 SEA FILE=HCAPLUS ABB=ON  L53 OR L56 OR L57 OR L58
L63        198308 SEA FILE=HCAPLUS ABB=ON  L60 OR TIO2 OR TIANIA OR TITANIUM
                  DIOXIDE
L65          2752 SEA FILE=HCAPLUS ABB=ON  L62(L)CAT/RL
L68        200859 SEA FILE=HCAPLUS ABB=ON  L60 OR TIO2 OR TITANIA OR TITANIUM
                  DIOXIDE
L69          1730 SEA FILE=HCAPLUS ABB=ON  L62 AND L68
L70            71 SEA FILE=HCAPLUS ABB=ON  L65 AND L69
L71            27 SEA FILE=HCAPLUS ABB=ON  L70 AND (L61 OR CARBON)
L72            10 SEA FILE=HCAPLUS ABB=ON  L70 AND (L61 OR (CARBON OR C)(3A)(ACTI
                  V? OR CARR?))
L73           554 SEA FILE=HCAPLUS ABB=ON  L63(5A)(L61 OR (CARBON OR C)(3A)(ACTIV
                  ? OR CARR?))
L74             1 SEA FILE=HCAPLUS ABB=ON  L65 AND L73
L75            10 SEA FILE=HCAPLUS ABB=ON  L72 OR L74
L76             5 SEA FILE=HCAPLUS ABB=ON  L71 AND COMPOSITE?
L77             3 SEA FILE=HCAPLUS ABB=ON  L71 AND ELECTROCAT?
L78            12 SEA FILE=HCAPLUS ABB=ON  (L75 OR L76 OR L77)
L80             8 SEA FILE=HCAPLUS ABB=ON  L70 AND (PREP? OR SYNTHE? OR PREP/RL)(
                  5A)CATALYST?
L81            19 SEA FILE=HCAPLUS ABB=ON  L78 OR L80
L82             8 SEA FILE=HCAPLUS ABB=ON  L70 AND (CARBON OR C)(3A)SUPPORT?
L83            24 SEA FILE=HCAPLUS ABB=ON  L81 OR L82
L92             6 SEA FILE=HCAPLUS ABB=ON  L81 AND COMPOSITE?
L93            24 SEA FILE=HCAPLUS ABB=ON  L83 OR L92
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L94        43918 SEA FILE=HCAPLUS ABB=ON  (CU OR COPPER OR MN OR MANGANESE OR
                 CO OR COBALT OR IRON OR FE OR FERR? OR ZN OR ZINC)(5A)(?PORPHY?
                  OR ?PHTHALOCYAN? OR SCHIFF? OR ?ANNULEN?)
L95          799 SEA FILE=HCAPLUS ABB=ON  L94 AND L68
L96          128 SEA FILE=HCAPLUS ABB=ON  L95 AND (CAT/RL OR CATALYST?)
L97           14 SEA FILE=HCAPLUS ABB=ON  L96 AND COMPOSITE?
L98           32 SEA FILE=HCAPLUS ABB=ON  L93 OR L97

=> FILE WPIX
FILE 'WPIX' ENTERED AT 17:15:53 ON 22 MAR 2005
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FILE LAST UPDATED:            21 MAR 2005      <20050321/UP>
MOST RECENT DERWENT UPDATE:      200519         <200519/DW>
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    FOR DETAILS. <<<

=> D QUE L109
L60            1 SEA FILE=REGISTRY ABB=ON  TITANIA/CN
L68       200859 SEA FILE=HCAPLUS ABB=ON  L60 OR TIO2 OR TITANIA OR TITANIUM
                 DIOXIDE
L89         4208 SEA FILE=HCAPLUS ABB=ON  TRANSITION(3A)METAL?(5A)(?PORPHY? OR
                 ?PHTHALOCYAN? OR SCHIFF? OR ?ANNULEN?)
L94        43918 SEA FILE=HCAPLUS ABB=ON  (CU OR COPPER OR MN OR MANGANESE OR
                 CO OR COBALT OR IRON OR FE OR FERR? OR ZN OR ZINC)(5A)(?PORPHY?
                  OR ?PHTHALOCYAN? OR SCHIFF? OR ?ANNULEN?)
L99          176 SEA FILE=WPIX ABB=ON  L94 AND L68
L100           5 SEA FILE=WPIX ABB=ON  L68 AND L89
L101         179 SEA FILE=WPIX ABB=ON  L99 OR L100
L102          23 SEA FILE=WPIX ABB=ON  L101 AND CATALYST?
L105          44 SEA FILE=WPIX ABB=ON  NON(W)PLATINUM OR NONPLATINUM? OR
                 NON(W)PT
L106           2 SEA FILE=WPIX ABB=ON  L105 AND  L68
L107           1 SEA FILE=WPIX ABB=ON  L106 AND CATALYST?
L108          24 SEA FILE=WPIX ABB=ON  L102 OR L107
L109           6 SEA FILE=WPIX ABB=ON  L108 AND COMPOSITE?
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=> ~~DUP REM L98~~ L109
FILE 'HCAPLUS' ENTERED AT 17:16:20 ON 22 MAR 2005
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PROCESSING COMPLETED FOR L98
PROCESSING COMPLETED FOR L109
L111         36 DUP REM L98 L109 (2 DUPLICATES REMOVED)

=> D L111 ALL HITSTR 1-36

L111 ANSWER 1 OF 36  HCAPLUS  COPYRIGHT 2005 ACS on STN
AN    2004:878312  HCAPLUS
DN    141:372892
ED    Entered STN:  22 Oct 2004
TI    Composites of zinc phthalocyanine and
      titanium oxide for use in photocatalytic processes
IN    Da Hora Machado, Antonio Eduardo
PA    Conselho Nacional de Desenvolvimento Cientifico e Tecnologico-CNPQ,
      Brazil; De Miranda, Jacques Antonio; Sattler, Christian; De Oliveira,
      Lamark
SO    PCT Int. Appl., 13 pp.
      CODEN: PIXXD2
DT    Patent
LA    English
IC    ICM  B01J
CC    74-13 (Radiation Chemistry, Photochemistry, and Photographic and Other
      Reprographic Processes)
      Section cross-reference(s): 60, 61, 67
FAN.CNT 1
      PATENT NO.            KIND   DATE          APPLICATION NO.          DATE
      ---------------       ----   --------      --------------------     --------
PI    WO 2004089525          A2    20041021      WO 2004-BR52             20040408
      WO 2004089525          A3    20041118
          W:  AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH,
              CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD,
              GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC,
              LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI,
              NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY,
              TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW
          RW: BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ,
              BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE,
              ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI,
              SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN,
              TD, TG
PRAI BR 2003-920             A     20030411
CLASS
 PATENT NO.       CLASS  PATENT FAMILY CLASSIFICATION CODES
 --------------   -----  ----------------------------------------------
 WO 2004089525    ICM    B01J
AB    The object of this invention are catalysts composites
      for photochem. processes which aims the environmental decontamination,
      having a very superior photocatalytic efficiency when compared with the
      observed for pure titanium oxides.  The photocatalytic composites
      are a combination of TiO2 with a photosensitizer dye, capable to
      mediate photocatalytic processes using the incident radiation in
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wavelength ranges incapable to promote the excitation of the pure photocatalyst. This occurs due to the electronic excitation of the dye in these regions of the electromagnetic spectrum. The excited photosensitizer dye promotes electron transfer to the conduction band of the **catalyst**, providing the photocatalytic action. With this, the wastewater treatment with the use of solar radiation becomes interesting, due to the captation of useful photons in a large range of the electromagnetic spectrum and energy conversion from these **composites**.

ST wastewater photocatalytic treatment purifn metal phthalocyanine titanium oxide

IT Photolysis **catalysts**
Wastewater treatment
(**composites** of **zinc phthalocyanine** and titanium oxide for use in photocatalytic processes)

IT **13463-67-7**, Titanium oxide, uses
RL: **CAT (Catalyst use)**; USES (Uses)
(P-25; **composites** of **zinc phthalocyanine** and titanium oxide for use in photocatalytic processes)

IT 14320-04-8, **Zinc phthalocyanine**
RL: **CAT (Catalyst use)**; USES (Uses)
(**composites** of **zinc phthalocyanine** and titanium oxide for use in photocatalytic processes)

IT **13463-67-7**, Titanium oxide, uses
RL: **CAT (Catalyst use)**; USES (Uses)
(P-25; **composites** of **zinc phthalocyanine** and titanium oxide for use in photocatalytic processes)

RN 13463-67-7 HCAPLUS
CN Titanium oxide (TiO_2) (8CI, 9CI) (CA INDEX NAME)

O=Ti=O

L111 ANSWER 2 OF 36 HCAPLUS COPYRIGHT 2005 ACS on STN
AN 2004:80987 HCAPLUS
DN 140:130469
ED Entered STN: 01 Feb 2004
TI Novel methods and compositions for improved electrophoretic display performance
IN Wu, Zarng-arh George; Haubrich, Jeanne E.; Wang, Xiaojia; Liang, Rong-chang
PA Sipix Imaging, Inc., USA
SO PCT Int. Appl., 38 pp.
CODEN: PIXXD2
DT Patent
LA English
IC ICM G02F001-00
CC 48-7 (Unit Operations and Processes)
Section cross-reference(s): 29, 35, 38, 74, 76
FAN.CNT 2

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2004010206	A2	20040129	WO 2003-US21681	20030710
	WO 2004010206	A3	20040408		

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN,
CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH,
GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR,

LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM,
PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN,
TR, TT, TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY,
KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES,
FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR,
BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG

CN 1469177	A	20040121	CN 2002-153622	20021127
PRAI US 2002-396680P	P	20020717		

CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
WO 2004010206	ICM	G02F001-00

AB The invention is directed to novel methods and compns. useful for improving the performance of electrophoretic displays. The methods comprise adding a high absorbance dye or pigment, or conductive particles or a charge transport material into an electrode protecting layer of the display.

ST electrophoretic display dye pigment conducting particle polymer sealant adhesive; electrophotog photoconductor photoreceptor coated electrode metal complex oxide organometallic

IT Oxidation potential
(<1.4 V (vs. SCE) for hole transport materials; dyes, pigments, crosslinking sealants and adhesives, and conducting polymer components and novel methods and compns. for improved electrophoretic display performance)

IT Isoalkanes
RL: NUU (Other use, unclassified); USES (Uses)
(C7-10; dyes, pigments, crosslinking sealants and adhesives, and conducting polymer components and novel methods and compns. for improved electrophoretic display performance)

IT Cyanine dyes
(Naphthalo, metal complexes; dyes, pigments, crosslinking sealants and adhesives, and conducting polymer components and novel methods and compns. for improved electrophoretic display performance)

IT UV absorption
(UV-visible, of dyes and pigments; dyes, pigments, crosslinking sealants and adhesives, and conducting polymer components and novel methods and compns. for improved electrophoretic display performance)

IT Carbon black, processes
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PYP (Physical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(Vulcan XC-72, **composite** sealant with Kraton G-R 6919 and Kraton G 1650; dyes, pigments, crosslinking sealants and adhesives, and conducting polymer components and novel methods and compns. for improved electrophoretic display performance)

IT Polysiloxanes, processes
RL: PEP (Physical, engineering or chemical process); PYP (Physical process); RCT (Reactant); PROC (Process); RACT (Reactant or reagent)
(acrylates, Ebecryl 1360; dyes, pigments, crosslinking sealants and adhesives, and conducting polymer components and novel methods and compns. for improved electrophoretic display performance)

IT Polysiloxanes, uses
RL: DEV (Device component use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
(acrylates, microcup polymer, laminated with primer-coated ITO/PET film; dyes, pigments, crosslinking sealants and adhesives, and conducting polymer components and novel methods and compns. for

improved electrophoretic display performance)

IT Ketones, uses
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(alkadienyl; dyes, pigments, crosslinking sealants and adhesives, and conducting polymer components and novel methods and compns. for improved electrophoretic display performance)

IT Nitriles, uses
Nitro compounds
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(and oligomers and polymers of; dyes, pigments, crosslinking sealants and adhesives, and conducting polymer components and novel methods and compns. for improved electrophoretic display performance)

IT Amines, uses
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(aromatic; dyes, pigments, crosslinking sealants and adhesives, and conducting polymer components and novel methods and compns. for improved electrophoretic display performance)

IT Isoprene-styrene rubber
Polymers, uses
Styrene-butadiene rubber, uses
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(block, triblock; dyes, pigments, crosslinking sealants and adhesives, and conducting polymer components and novel methods and compns. for improved electrophoretic display performance)

IT Synthetic rubber, uses
RL: POF (Polymer in formulation); TEM (Technical or engineered material use); USES (Uses)
(butadiene-isoprene-styrene, hydrogenated, block, **composite** sealant with Kraton G 1650 and Carb-O-Sil or carbon black; dyes, pigments, crosslinking sealants and adhesives, and conducting polymer components and novel methods and compns. for improved electrophoretic display performance)

IT **Metalloporphyrins**
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(**cobalt**; dyes, pigments, crosslinking sealants and adhesives, and conducting polymer components and novel methods and compns. for improved electrophoretic display performance)

IT Acrylic polymers, uses
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(cyano-containing; dyes, pigments, crosslinking sealants and adhesives, and conducting polymer components and novel methods and compns. for improved electrophoretic display performance)

IT Isocyanates
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(di- and poly- monomers, polymers containing; dyes, pigments, crosslinking sealants and adhesives, and conducting polymer components and novel methods and compns. for improved electrophoretic display performance)

IT Adhesives
Coating materials
Crosslinking
Dyes
Electric conductors

Electrodes
Electrophotographic apparatus
Electrophotographic photoconductors (photoreceptors)
Embossing
Lamination
Pigments, nonbiological
Sealing compositions
(dyes, pigments, crosslinking sealants and adhesives, and conducting polymer components and novel methods and compns. for improved electrophoretic display performance)

IT Thermoplastic rubber
RL: DEV (Device component use); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(dyes, pigments, crosslinking sealants and adhesives, and conducting polymer components and novel methods and compns. for improved electrophoretic display performance)

IT Alkadienes
Enamines
Epoxy resins, uses
Hydrazones
Metals, uses
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(dyes, pigments, crosslinking sealants and adhesives, and conducting polymer components and novel methods and compns. for improved electrophoretic display performance)

IT Diazo compounds
Metallophthalocyanines
Metalloporphyrins
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
(dyes; dyes, pigments, crosslinking sealants and adhesives, and conducting polymer components and novel methods and compns. for improved electrophoretic display performance)

IT Oxides (inorganic), uses
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(elec. conductive; dyes, pigments, crosslinking sealants and adhesives, and conducting polymer components and novel methods and compns. for improved electrophoretic display performance)

IT Carbonaceous materials (technological products)
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(elec. conductor; dyes, pigments, crosslinking sealants and adhesives, and conducting polymer components and novel methods and compns. for improved electrophoretic display performance)

IT Optical imaging devices
(electrophoretic; dyes, pigments, crosslinking sealants and adhesives, and conducting polymer components and novel methods and compns. for improved electrophoretic display performance)

IT Polyurethanes, uses
RL: DEV (Device component use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
(encapsulated **TiO2**; dyes, pigments, crosslinking sealants and adhesives, and conducting polymer components and novel methods and compns. for improved electrophoretic display performance)

IT Polyesters, processes
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PYP (Physical process); TEM (Technical or engineered material

use); PROC (Process); USES (Uses)
(film coated with ITO; dyes, pigments, crosslinking sealants and adhesives, and conducting polymer components and novel methods and compns. for improved electrophoretic display performance)

IT Styrene-butadiene rubber, uses
RL: POF (Polymer in formulation); TEM (Technical or engineered material use); USES (Uses)
(hydrogenated, block, triblock, Kraton G 1650, **composite** with Kraton G-R 6919/Carb-O-Sil or Carbon black; dyes, pigments, crosslinking sealants and adhesives, and conducting polymer components and novel methods and compns. for improved electrophoretic display performance)

IT Engineering
(inventions; dyes, pigments, crosslinking sealants and adhesives, and conducting polymer components and novel methods and compns. for improved electrophoretic display performance)

IT Epoxides
RL: RCT (Reactant); TEM (Technical or engineered material use); RACT (Reactant or reagent); USES (Uses)
(mono- and multifunctional oligomers and polymers containing; dyes, pigments, crosslinking sealants and adhesives, and conducting polymer components and novel methods and compns. for improved electrophoretic display performance)

IT Azo dyes
(monoazo, diazo, and polyazo; dyes, pigments, crosslinking sealants and adhesives, and conducting polymer components and novel methods and compns. for improved electrophoretic display performance)

IT Allylic compounds
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(multifunctional monomers, polymers of; dyes, pigments, crosslinking sealants and adhesives, and conducting polymer components and novel methods and compns. for improved electrophoretic display performance)

IT Metalloporphyrins
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
(nickel, dyes; dyes, pigments, crosslinking sealants and adhesives, and conducting polymer components and novel methods and compns. for improved electrophoretic display performance)

IT Heterocyclic compounds
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(nitrogen, five-membered, triazoles; dyes, pigments, crosslinking sealants and adhesives, and conducting polymer components and novel methods and compns. for improved electrophoretic display performance)

IT Alloys, uses
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(nonferrous; dyes, pigments, crosslinking sealants and adhesives, and conducting polymer components and novel methods and compns. for improved electrophoretic display performance)

IT IR absorption
(of dyes and pigments; dyes, pigments, crosslinking sealants and adhesives, and conducting polymer components and novel methods and compns. for improved electrophoretic display performance)

IT Electrophoresis apparatus
(optical imaging; dyes, pigments, crosslinking sealants and adhesives, and conducting polymer components and novel methods and compns. for improved electrophoretic display performance)

IT Polymerization
(photopolymn.; dyes, pigments, crosslinking sealants and adhesives, and conducting polymer components and novel methods and compns. for improved electrophoretic display performance)

IT Transition metal complexes
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
(phthalocyanine, dyes; dyes, pigments, crosslinking sealants and adhesives, and conducting polymer components and novel methods and compns. for improved electrophoretic display performance)

IT Vinyl compounds, uses
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(polymers, from multifunctional monomers; dyes, pigments, crosslinking sealants and adhesives, and conducting polymer components and novel methods and compns. for improved electrophoretic display performance)

IT Vanadyl complexes
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
(porphyrin, dyes; dyes, pigments, crosslinking sealants and adhesives, and conducting polymer components and novel methods and compns. for improved electrophoretic display performance)

IT Plastics, uses
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(thermoplastics; dyes, pigments, crosslinking sealants and adhesives, and conducting polymer components and novel methods and compns. for improved electrophoretic display performance)

IT Epoxides
Polyamides, reactions
Polycarbonates, reactions
Polyesters, reactions
Polyethers, reactions
Polyurethanes, reactions
Polyvinyl butyrals
RL: RCT (Reactant); TEM (Technical or engineered material use); RACT (Reactant or reagent); USES (Uses)
(thermoset or thermoplastic precursor; dyes, pigments, crosslinking sealants and adhesives, and conducting polymer components and novel methods and compns. for improved electrophoretic display performance)

IT Plastics, uses
RL: DEV (Device component use); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(thermosetting; dyes, pigments, crosslinking sealants and adhesives, and conducting polymer components and novel methods and compns. for improved electrophoretic display performance)

IT Metallophthalocyanines
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
(transition metal complexes, dyes; dyes, pigments, crosslinking sealants and adhesives, and conducting polymer components and novel methods and compns. for improved electrophoretic display performance)

IT Metalloporphyrins
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
(vanadyl, dyes; dyes, pigments, crosslinking sealants and adhesives, and conducting polymer components and novel methods and compns. for improved electrophoretic display performance)

IT Nitrile rubber, processes

RL: PEP (Physical, engineering or chemical process); PYP (Physical process); RCT (Reactant); PROC (Process); RACT (Reactant or reagent)
(vinyl group-terminated, Hycar 1300-43; dyes, pigments, crosslinking sealants and adhesives, and conducting polymer components and novel methods and compns. for improved electrophoretic display performance)

IT Ethers, reactions
RL: RCT (Reactant); TEM (Technical or engineered material use); RACT (Reactant or reagent); USES (Uses)
(vinyl, polymers, oligomers and polymers containing, thermoset or thermoplastic precursor; dyes, pigments, crosslinking sealants and adhesives, and conducting polymer components and novel methods and compns. for improved electrophoretic display performance)

IT Ethers, reactions
RL: RCT (Reactant); TEM (Technical or engineered material use); RACT (Reactant or reagent); USES (Uses)
(vinyl, thermoset or thermoplastic precursor; dyes, pigments, crosslinking sealants and adhesives, and conducting polymer components and novel methods and compns. for improved electrophoretic display performance)

IT 4687-94-9, Ebecryl 600
RL: PEP (Physical, engineering or chemical process); PYP (Physical process); RCT (Reactant); PROC (Process); RACT (Reactant or reagent)
(Bisphenol A-containing diacrylate; dyes, pigments, crosslinking sealants and adhesives, and conducting polymer components and novel methods and compns. for improved electrophoretic display performance)

IT 13048-33-4, 1,6-Hexanediol diacrylate
RL: PEP (Physical, engineering or chemical process); PYP (Physical process); RCT (Reactant); PROC (Process); RACT (Reactant or reagent)
(HDODA; dyes, pigments, crosslinking sealants and adhesives, and conducting polymer components and novel methods and compns. for improved electrophoretic display performance)

IT 75081-21-9, ITX
RL: PEP (Physical, engineering or chemical process); PYP (Physical process); RCT (Reactant); PROC (Process); RACT (Reactant or reagent)
(ITX; dyes, pigments, crosslinking sealants and adhesives, and conducting polymer components and novel methods and compns. for improved electrophoretic display performance)

IT 50926-11-9, Indium tin oxide
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PYP (Physical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(PET film coated with; dyes, pigments, crosslinking sealants and adhesives, and conducting polymer components and novel methods and compns. for improved electrophoretic display performance)

IT 60506-81-2, SR 399
RL: PEP (Physical, engineering or chemical process); PYP (Physical process); RCT (Reactant); PROC (Process); RACT (Reactant or reagent)
(a tetraacrylate; dyes, pigments, crosslinking sealants and adhesives, and conducting polymer components and novel methods and compns. for improved electrophoretic display performance)

IT 41484-35-9, Irganox 1035
RL: PEP (Physical, engineering or chemical process); PYP (Physical process); RCT (Reactant); PROC (Process); RACT (Reactant or reagent)
(bis (hindered phenol thioether); dyes, pigments, crosslinking sealants and adhesives, and conducting polymer components and novel methods and compns. for improved electrophoretic display performance)

IT 138184-94-8, Cab-O-Sil TS 720
RL: TEM (Technical or engineered material use); USES (Uses)
(**composite** sealant with Kraton G-R 6919 and Kraton G 1650;

dyes, pigments, crosslinking sealants and adhesives, and conducting polymer components and novel methods and compns. for improved electrophoretic display performance)

IT 65181-78-4, N,N'-Bis(3-methylphenyl)-N-N'-diphenylbenzidine
RL: DEV (Device component use); USES (Uses)
(dye, in Duro-Tak adhesive layer; dyes, pigments, crosslinking sealants and adhesives, and conducting polymer components and novel methods and compns. for improved electrophoretic display performance)

IT 12227-55-3, Orasol Red BL 12237-23-9, Orasol Black CN 61931-55-3, Orasol Yellow 2GLN
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PYP (Physical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(dye, in Duro-Tak adhesive layer; dyes, pigments, crosslinking sealants and adhesives, and conducting polymer components and novel methods and compns. for improved electrophoretic display performance)

IT 56996-93-1, Sudan Black 61901-87-9, Orasol Black RLI 71799-11-6, Orasol Blue GL
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(dye, in Duro-Tak adhesive layer; dyes, pigments, crosslinking sealants and adhesives, and conducting polymer components and novel methods and compns. for improved electrophoretic display performance)

IT 14916-87-1, FC 3275
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PYP (Physical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(dye; dyes, pigments, crosslinking sealants and adhesives, and conducting polymer components and novel methods and compns. for improved electrophoretic display performance)

IT 77-58-7, Dibutyltin dilaurate
RL: **CAT (Catalyst use)**; USES (Uses)
(dyes, pigments, crosslinking sealants and adhesives, and conducting polymer components and novel methods and compns. for improved electrophoretic display performance)

IT 78-93-3, Methyl ethyl ketone, uses
RL: DEV (Device component use); NUU (Other use, unclassified); USES (Uses)
(dyes, pigments, crosslinking sealants and adhesives, and conducting polymer components and novel methods and compns. for improved electrophoretic display performance)

IT 147-14-8D, **Copper phthalocyanine**, derivs.
7429-90-5D, Aluminum, phthalocyanine or naphthalocyanine complexes
7439-89-6D, **Iron, phthalocyanine** or **naphthalocyanine** complexes 7439-92-1D, Lead, phthalocyanine or naphthalocyanine complexes 7439-95-4, Magnesium, processes 7440-02-0D, Nickel, naphthalocyanine derivs. complexes 7440-31-5D, Tin, phthalocyanine or naphthalocyanine complexes 7440-32-6D, Titanium, naphthalocyanine derivs. complexes 7440-43-9D, Cadmium, phthalocyanine or naphthalocyanine complexes 7440-48-4D, **Cobalt, naphthalocyanine** derivs. complexes 7440-62-2D, Vanadium, phthalocyanine or naphthalocyanine complexes 7440-66-6D, **Zinc, phthalocyanine** or **naphthalocyanine** complexes
7440-74-6D, Indium, phthalocyanine or naphthalocyanine complexes
78675-98-6D, Squaraine, derivs.
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
(dyes, pigments, crosslinking sealants and adhesives, and conducting polymer components and novel methods and compns. for improved electrophoretic display performance)

IT 9003-42-3, Poly(ethyl methacrylate)
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PYP (Physical process); RCT (Reactant); PROC (Process); RACT (Reactant or reagent); USES (Uses)
(dyes, pigments, crosslinking sealants and adhesives, and conducting polymer components and novel methods and compns. for improved electrophoretic display performance)

IT 74-82-8D, Methane, triaryl derivs. 81-33-4 85-83-6, Sudan IV 85-86-9, Sudan III 86-74-8D, Carbazole, derivs. 92-52-4D, Biphenyl, derivs. 129-79-3, 2,4,7-Trinitro-9-fluorenone 288-42-6D, Oxazole, derivs. 288-99-3D, 1,3,4-Oxadiazole, 2,5-bis(4-N,N'-dialkylaminophenyl) 486-25-9, Fluorenone 486-25-9D, Fluorenone, oligomers and polymers of 809-73-4 842-07-9, Sudan yellow 966-88-1D, Benzaldehyde-N,N-diphenylhydrazone, p-dialkylamino derivs. 1159-53-1 1229-55-6, Sudan R 1450-63-1, 1,1,4,4-Tetraphenylbutadiene 1484-96-4 1518-16-7 2085-33-8 2417-00-7 2455-14-3 2491-91-0, 2,5-Bis(4-methylphenyl)-1,3,4-oxadiazole 3118-97-6, Sudan II 4197-25-5, Sudan Black B 5152-94-3 7429-90-5, Aluminum, uses 7429-90-5D, Aluminum, alloys 7439-89-6, Iron, uses 7439-89-6D, Iron, alloys 7440-02-0D, Nickel, alloys 7440-22-4, Silver, uses 7440-22-4D, Silver, alloys 7440-50-8, Copper, uses 7440-50-8D, Copper, alloys 7440-57-5, Gold, uses 7440-57-5D, Gold, alloys 7440-74-6, Indium, uses 7440-74-6D, Indium, alloys 7782-42-5, Graphite, uses 9003-39-8, Polyvinylpyrrolidone 9003-55-8, Styrene-butadiene copolymer 11120-54-0D, Oxadiazole, derivs. 12673-86-8, Antimony tin oxide 14705-63-6 14705-63-6D, alkylated and alkoxylated derivs. 14752-00-2 15546-43-7, N,N,N',N'-Tetraphenylbenzidine 20441-06-9 23467-27-8 24937-78-8, Ethylene-vinyl acetate copolymer 26009-24-5, Poly(p-phenylene vinylene) 33200-26-9 35079-58-4 35458-94-7 36118-45-3D, Pyrazoline, Ph dialkylaminostyrene dialkylaminophenyl derivs. 36118-45-3D, Pyrazoline, derivs. 41584-66-1 43134-09-4 51325-95-2 58280-31-2 58328-31-7, 4,4'-Bis(carbazol-9-yl)biphenyl 58473-78-2 59765-31-0 59869-79-3 69361-50-8D, bis(4-N,N-dialkylamino) 75232-44-9 76185-65-4 82532-76-1 83992-95-4 85171-94-4 89114-90-9 89114-91-0 89991-16-2 93376-18-2, (4-Butoxycarbonyl-9-fluorenylidene)malononitrile 93975-08-7 93975-09-8 94665-89-1 95270-88-5, Polyfluorene 95993-52-5 96492-45-4 97671-90-4 103079-11-4 105389-36-4, 4,4',4''-Tris(N,N-diphenylamino)triphenylamine 117944-65-7, Indium zinc oxide 123847-85-8 126213-51-2, Poly(3,4,-ethylenedioxythiophene) 127022-77-9, Hexakis(benzylthio)benzene 138171-14-9 138372-67-5 139092-78-7 139255-17-7 141752-82-1 142289-08-5 150405-69-9 154896-84-1 164534-25-2 174493-15-3 182507-83-1 184101-39-1 185690-39-5, 4,4',4''-Tris[N-(1-naphthyl)-N-phenylamino]triphenylamine 203799-76-2 254435-83-1, Sudan Blue 376386-75-3 482654-95-5 649735-34-2 649735-35-3 649735-37-5D, 2,5-bis(4-dialkylaminophenyl) derivs. 649735-38-6 650609-45-3 650609-46-4 650609-47-5 650609-48-6
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(dyes, pigments, crosslinking sealants and adhesives, and conducting polymer components and novel methods and compns. for improved electrophoretic display performance)

IT 68-12-2, Dimethylformamide, uses 108-21-4, Isopropyl acetate 108-88-3, Toluene, uses 110-54-3, Hexane, uses 141-78-6, Ethyl acetate, uses
RL: NUU (Other use, unclassified); USES (Uses)
(dyes, pigments, crosslinking sealants and adhesives, and conducting polymer components and novel methods and compns. for improved electrophoretic display performance)

IT 650634-86-9, Duro-Tak 1105

RL: PEP (Physical, engineering or chemical process); PYP (Physical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(dyes, pigments, crosslinking sealants and adhesives, and conducting polymer components and novel methods and compns. for improved electrophoretic display performance)

IT 6712-98-7 15625-89-5, Trimethylolpropane triacrylate 165169-07-3, Desmodur N 3400 601484-87-1
RL: RCT (Reactant); RACT (Reactant or reagent)
(dyes, pigments, crosslinking sealants and adhesives, and conducting polymer components and novel methods and compns. for improved electrophoretic display performance)

IT 198-55-0, Perylene 488-86-8D, Croconic acid, amine derivs. 3317-67-7, **Cobalt phthalocyanine** 12226-78-7, C.I.Solvent Blue 67 14055-02-8D, Nickel phthalocyanine, derivs. 14172-92-0, Nickel tetraphenylporphine 33273-09-5D, derivs. 52324-93-3, Titanium phthalocyanine
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
(dyes; dyes, pigments, crosslinking sealants and adhesives, and conducting polymer components and novel methods and compns. for improved electrophoretic display performance)

IT 650609-44-2P
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PYP (Physical process); SPN (Synthetic preparation); PREP (Preparation); PROC (Process); USES (Uses)
(electrophoretic **TiO2** encapsulant; dyes, pigments, crosslinking sealants and adhesives, and conducting polymer components and novel methods and compns. for improved electrophoretic display performance)

IT **13463-67-7**, R900, uses
RL: DEV (Device component use); USES (Uses)
(encapsulated with electrophoretic polymer; dyes, pigments, crosslinking sealants and adhesives, and conducting polymer components and novel methods and compns. for improved electrophoretic display performance)

IT 25038-59-9, PET, processes
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PYP (Physical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(film coated with ITO; dyes, pigments, crosslinking sealants and adhesives, and conducting polymer components and novel methods and compns. for improved electrophoretic display performance)

IT 119313-12-1, Irgacure 369
RL: **CAT (Catalyst use)**; PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
(initiator; dyes, pigments, crosslinking sealants and adhesives, and conducting polymer components and novel methods and compns. for improved electrophoretic display performance)

IT 105729-79-1 700836-36-8
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(isoprene-styrene rubber, block, triblock; dyes, pigments, crosslinking sealants and adhesives, and conducting polymer components and novel methods and compns. for improved electrophoretic display performance)

IT 7440-02-0, Nickel, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(microcup base template; dyes, pigments, crosslinking sealants and adhesives, and conducting polymer components and novel methods and

compns. for improved electrophoretic display performance)
IT 4687-94-9DP, Ebecryl 600, polymers containing 13048-33-4DP, HDDA, polymers containing 15625-89-5DP, TMPTA, polymers containing 60506-81-2DP, SR 399, polymers containing
RL: DEV (Device component use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
(microcup polymer, laminated with primer-coated ITO/PET film; dyes, pigments, crosslinking sealants and adhesives, and conducting polymer components and novel methods and compns. for improved electrophoretic display performance)
IT 9003-18-3
RL: PEP (Physical, engineering or chemical process); PYP (Physical process); RCT (Reactant); PROC (Process); RACT (Reactant or reagent)
(nitrile rubber, vinyl group-terminated, Hycar 1300-43; dyes, pigments, crosslinking sealants and adhesives, and conducting polymer components and novel methods and compns. for improved electrophoretic display performance)
IT 12047-27-7, K-Plus 16, uses
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(pigment, in Duro-Tak adhesive layer; dyes, pigments, crosslinking sealants and adhesives, and conducting polymer components and novel methods and compns. for improved electrophoretic display performance)
IT 115452-84-1, Disperbyk 163
RL: MOA (Modifier or additive use); USES (Uses)
(polymeric dispersant; dyes, pigments, crosslinking sealants and adhesives, and conducting polymer components and novel methods and compns. for improved electrophoretic display performance)
IT 649735-33-1P
RL: DEV (Device component use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
(primer coating for ITO/PET film; dyes, pigments, crosslinking sealants and adhesives, and conducting polymer components and novel methods and compns. for improved electrophoretic display performance)
IT 106107-54-4 694491-73-1
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(styrene-butadiene rubber, block, triblock; dyes, pigments, crosslinking sealants and adhesives, and conducting polymer components and novel methods and compns. for improved electrophoretic display performance)
IT 53568-48-2, Disperse-Ayd 6
RL: MOA (Modifier or additive use); USES (Uses)
(surfactant; dyes, pigments, crosslinking sealants and adhesives, and conducting polymer components and novel methods and compns. for improved electrophoretic display performance)
IT 79-10-7D, Acrylic acid, multifunctional and multi- esters, oligomers and polymers containing 79-10-7D, Acrylic acid, multifunctional esters 79-41-4D, Methacrylic acid, multifunctional and multi- esters, oligomers and polymers containing 79-41-4D, Methacrylic acid, multifunctional esters 100-42-5D, Styrene, derivs. 100-42-5D, Styrene, oligomers and polymers containing 9003-01-4D, Polyacrylic acid, alkyl esters 9004-36-8, Cellulose acetate butyrate 25087-26-7D, Polymethacrylic acid, alkyl esters
RL: RCT (Reactant); TEM (Technical or engineered material use); RACT (Reactant or reagent); USES (Uses)
(thermoset or thermoplastic precursor; dyes, pigments, crosslinking sealants and adhesives, and conducting polymer components and novel methods and compns. for improved electrophoretic display performance)
IT 477290-74-7, Galden HT 200

RL: NUU (Other use, unclassified); RCT (Reactant); RACT (Reactant or reagent); USES (Uses)
(tri-hydric amino alc.; dyes, pigments, crosslinking sealants and adhesives, and conducting polymer components and novel methods and compns. for improved electrophoretic display performance)

IT **13463-67-7**, R900, uses
RL: DEV (Device component use); USES (Uses)
(encapsulated with electrophoretic polymer; dyes, pigments, crosslinking sealants and adhesives, and conducting polymer components and novel methods and compns. for improved electrophoretic display performance)

RN 13463-67-7 HCAPLUS

CN Titanium oxide (TiO2) (8CI, 9CI) (CA INDEX NAME)

O=Ti=O

L111 ANSWER 3 OF 36 HCAPLUS COPYRIGHT 2005 ACS on STN

AN 2004:1124259 HCAPLUS

DN 142:77583

ED Entered STN: 23 Dec 2004

TI Fuel cell with liquid fuel and liquid peroxide oxidant and procedures for the production and regeneration of fuel and oxidant

IN Buttkewitz, Gerhard; Foge, Detlef; Schmuhl, Andreas; Jeroschewski, Paul

PA AMT Analysenmesstechnik G.m.b.H., Germany; ATI Kueste G.m.b.H.

SO Ger. Offen., 10 pp.
CODEN: GWXXBX

DT Patent

LA German

IC ICM H01M008-22

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 67

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	DE 10324200	A1	20041223	DE 2003-10324200	20030528
PRAI	DE 2003-10324200		20030528		

CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
DE 10324200	ICM	H01M008-22

AB The invention concerns a fuel cell with liquid fuel and liquid peroxide oxidant as as well as chemical and/or electrochem. procedures for the production and/or regeneration of fuel and oxidant. It refers especially to fuel cells, which are fabricated pressure-neutrally and to the optimization of fuel-oxidant combinations using special catalyst materials with low ambient temps. In a special construction of the invention, fuel and/or oxidant are produced chemical or electrochem. from carriers or from the reaction products of the fuel cell. The fuel cell according to invention can be inserted with priority in the underwater region or used in totally enclosed systems, in addition, under normal conditions for power supply.

ST fuel cell liq fuel liq peroxide oxidant

IT Cyclic compounds
RL: CAT (Catalyst use); USES (Uses)
(annulenes, tetraaza; fuel cell with liquid fuel and liquid peroxide oxidant and procedures for production and regeneration of fuel and oxidant)

IT Reduction catalysts
(electrochem.; fuel cell with liquid fuel and liquid peroxide oxidant and procedures for production and regeneration of fuel and oxidant)
IT Polyoxyalkylenes, uses
RL: DEV (Device component use); USES (Uses)
(fluorine- and sulfo-containing, ionomers; fuel cell with liquid fuel and liquid peroxide oxidant and procedures for production and regeneration of fuel and oxidant)
IT Fuel cells
(fuel cell with liquid fuel and liquid peroxide oxidant and procedures for production and regeneration of fuel and oxidant)
IT Porphyrins
Quinones
RL: CAT (Catalyst use); USES (Uses)
(fuel cell with liquid fuel and liquid peroxide oxidant and procedures for production and regeneration of fuel and oxidant)
IT Alcohols, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(fuel cell with liquid fuel and liquid peroxide oxidant and procedures for production and regeneration of fuel and oxidant)
IT Aldehydes, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(fuel cell with liquid fuel and liquid peroxide oxidant and procedures for production and regeneration of fuel and oxidant)
IT Fuels
Oxidizing agents
(liquid; fuel cell with liquid fuel and liquid peroxide oxidant and procedures for production and regeneration of fuel and oxidant)
IT Peroxides, processes
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PROC (Process)
(liquid; fuel cell with liquid fuel and liquid peroxide oxidant and procedures for production and regeneration of fuel and oxidant)
IT Fluoropolymers, uses
RL: DEV (Device component use); USES (Uses)
(polyoxyalkylene-, sulfo-containing, ionomers; fuel cell with liquid fuel
and
liquid peroxide oxidant and procedures for production and regeneration of fuel and oxidant)
IT Ionomers
RL: DEV (Device component use); USES (Uses)
(polyoxyalkylenes, fluorine- and sulfo-containing; fuel cell with liquid
fuel
and liquid peroxide oxidant and procedures for production and regeneration
of
fuel and oxidant)
IT 574-93-6, Phthalocyanine 1313-27-5, Molybdenum oxide (MoO3), uses 1314-23-4, Zirconia, uses 1314-35-8, Tungsten oxide (WO3), uses 7439-88-5, Iridium, uses 7439-89-6, Iron, uses 7440-02-0, Nickel, uses 7440-05-3, Palladium, uses 7440-06-4, Platinum, uses 7440-16-6, Rhodium, uses 7440-18-8, Ruthenium, uses **7440-44-0**, Carbon, uses 7440-48-4, Cobalt, uses 7440-50-8, Copper, uses 11104-61-3, Cobalt oxide 11129-60-5, Manganese oxide 12070-13-2, Tungsten carbide (W2C) 12610-90-1 **13463-67-7**, **Titania**, uses 13762-14-6, Cobalt molybdenum oxide (CoMoO4) 14167-12-5 14167-18-1, Cobalt salen 14167-20-5, Nickel(II) salen 25265-76-3, Phenylenediamine **28903-71-1** 37373-34-5 53218-63-6 55940-93-7 106354-33-0 123183-24-4 123183-36-8 812665-46-6, Antimony iridium oxide (SbIrO4) 812665-52-4, Antimony titanium oxide (SbTiO4) 812692-85-6 812693-20-2

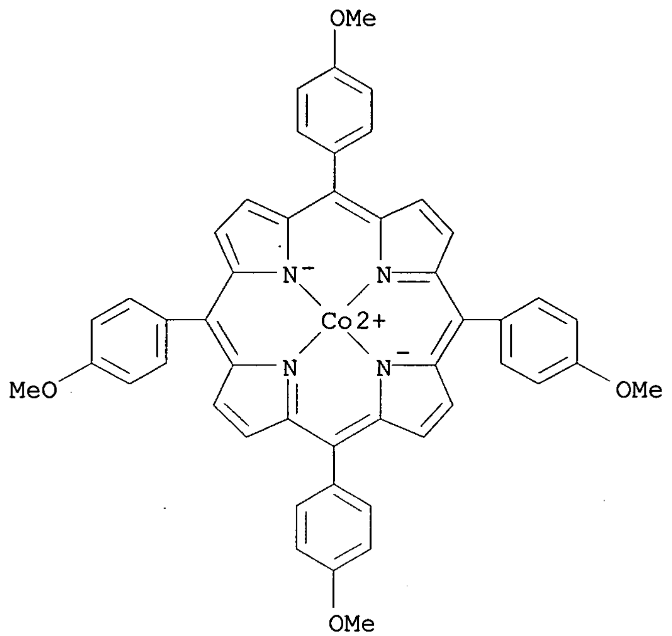
812693-21-3 812693-22-4 812693-23-5 812693-26-8 812693-27-9
812693-30-4 812693-31-5 812693-32-6 812693-36-0 812693-37-1
812693-38-2 812693-39-3
RL: **CAT (Catalyst use)**; USES (Uses)
(fuel cell with liquid fuel and liquid peroxide oxidant and procedures for production and regeneration of fuel and oxidant)
IT 7722-84-1, Hydrogen peroxide, processes
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PROC (Process)
(fuel cell with liquid fuel and liquid peroxide oxidant and procedures for production and regeneration of fuel and oxidant)
IT 77950-55-1, Nafion 115
RL: DEV (Device component use); USES (Uses)
(fuel cell with liquid fuel and liquid peroxide oxidant and procedures for production and regeneration of fuel and oxidant)
IT 64-18-6, Formic acid, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(fuel cell with liquid fuel and liquid peroxide oxidant and procedures for production and regeneration of fuel and oxidant)
RE.CNT 3 THERE ARE 3 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE
(1) Anon; EP 0252559 B1 HCAPLUS
(2) Anon; DE 19804880 A1 HCAPLUS
(3) Anon; DE 69622747 T2
IT **7440-44-0**, Carbon, uses **13463-67-7**, **Titania**, uses **28903-71-1**
RL: **CAT (Catalyst use)**; USES (Uses)
(fuel cell with liquid fuel and liquid peroxide oxidant and procedures for production and regeneration of fuel and oxidant)
RN 7440-44-0 HCAPLUS
CN Carbon (7CI, 8CI, 9CI) (CA INDEX NAME)

C

RN 13463-67-7 HCAPLUS
CN Titanium oxide (TiO2) (8CI, 9CI) (CA INDEX NAME)

O=Ti=O

RN 28903-71-1 HCAPLUS
CN Cobalt, [5,10,15,20-tetrakis(4-methoxyphenyl)-21H,23H-porphinato(2-)-κN21,κN22,κN23,κN24]-, (SP-4-1)- (9CI) (CA INDEX NAME)



L111 ANSWER 4 OF 36 HCAPLUS COPYRIGHT 2005 ACS on STN
AN 2003:187890 HCAPLUS
DN 138:225772
ED Entered STN: 11 Mar 2003
TI Adsorptive deodorant and deodorization product for deodorizing malodorous substances emitted from construction materials
IN Kondo, Yumiko
PA Otsuka Sangyo Interia K. K., Japan; Kojima Kagaku Kogyo K. K.
SO Jpn. Kokai Tokkyo Koho, 11 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
IC ICM A61L009-00
ICS A61L009-01; A61L009-16; B01D053-86; B01J020-20
CC 59-6 (Air Pollution and Industrial Hygiene)
Section cross-reference(s): 67
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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PI	JP 2003070887	A2	20030311	JP 2001-268560	20010905
PRAI	JP 2001-268560		20010905		

CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
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JP 2003070887	ICM	A61L009-00
	ICS	A61L009-01; A61L009-16; B01D053-86; B01J020-20

AB The adsorptive deodorant comprises a hydrophilic adsorbent and a hydrophobic adsorbent capable of adsorbing malodorous substances and a catalytic material capable of decomposing the adsorbed malodorous substances and the deodorization product contains the adsorptive deodorant. The hydrophilic adsorbent may be $CaCO_3$, $CaSO_4$, diatomaceous earth, kaolin, active white clay, SiO_2, a zeolite, Al_2O_3, and/or charcoal of needle-leaf

trees; the hydrophobic adsorbent may be charcoal of needle-leaf trees, bituminous coal-containing charcoal powder, bamboo charcoal, **active** coal, a **activated carbon** fiber, and/or a carbide; and the catalytic material is a fine powder of metal oxides, metal-phthalocyanide complexes, Pt, Au, and the like. NH3, formaldehyde, H2S, toluene and the like can be efficiently decomposed

ST deodorant hydrophilic hydrophobic adsorbent catalyst; air deodorization deodorant adsorbent catalyst

IT **Carbon** fibers, uses
RL: NUU (Other use, unclassified); USES (Uses)
(**activated**, hydrophobic adsorbent, in deodorant; adsorptive deodorant containing adsorbent and catalyst for air deodorization and deodorization product using the deodorant)

IT Charcoal
RL: NUU (Other use, unclassified); USES (Uses)
(adsorbent, in deodorant; adsorptive deodorant containing adsorbent and catalyst for air deodorization and deodorization product using the deodorant)

IT Deodorants
(adsorptive deodorant containing adsorbent and catalyst for air deodorization and deodorization product using the deodorant)

IT Air purification
(deodorization, products; adsorptive deodorant containing adsorbent and catalyst for air deodorization and deodorization product using the deodorant)

IT Zeolites (synthetic), uses
RL: NUU (Other use, unclassified); USES (Uses)
(hydrophilic adsorbent, in deodorant, ZO 50 as; adsorptive deodorant containing adsorbent and catalyst for air deodorization and deodorization product using the deodorant)

IT Clays, uses
Diatomite
Kaolin, uses
RL: NUU (Other use, unclassified); USES (Uses)
(hydrophilic adsorbent, in deodorant; adsorptive deodorant containing adsorbent and catalyst for air deodorization and deodorization product using the deodorant)

IT Adsorbents
(hydrophilic and hydrophobic, in deodorants; adsorptive deodorant containing adsorbent and catalyst for air deodorization and deodorization product using the deodorant)

IT Carbides
RL: NUU (Other use, unclassified); USES (Uses)
(hydrophobic adsorbent, in deodorant; adsorptive deodorant containing adsorbent and catalyst for air deodorization and deodorization product using the deodorant)

IT Catalysts
(in deodorants; adsorptive deodorant containing adsorbent and catalyst for air deodorization and deodorization product using the deodorant)

IT 1314-13-2, Nanofine W 1, uses
RL: CAT (Catalyst use); USES (Uses)
(activated, catalyst, in adsorbent, Nanofine W 1 as; adsorptive deodorant containing adsorbent and catalyst for air deodorization and deodorization product using the deodorant)

IT **7440-44-0, Carbon,** uses
RL: NUU (Other use, unclassified); USES (Uses)
(**activated,** hydrophobic adsorbent, in deodorant; adsorptive deodorant containing adsorbent and catalyst for air deodorization and deodorization product using the deodorant)

IT 50-00-0, Formaldehyde, processes 108-88-3, Toluene, processes
7664-41-7, Ammonia, processes 7783-06-4, Hydrogen sulfide, processes
RL: POL (Pollutant); REM (Removal or disposal); OCCU (Occurrence); PROC (Process)
(adsorptive deodorant containing adsorbent and catalyst for air deodorization and deodorization product using the deodorant)

IT **132-16-1 147-14-8,** Copper phthalocyanine 574-93-6D, Phthalocyanine, metal complexes 1344-70-3, Copper oxide
3317-67-7, Cobalt phthalocyanine 7440-06-4, Platinum, uses
7440-57-5, Gold, uses 11129-60-5, Manganese oxide **13463-67-7,** Titanium oxide, uses
RL: **CAT (Catalyst use)**; USES (Uses)
(catalyst, in adsorbent; adsorptive deodorant containing adsorbent and catalyst for air deodorization and deodorization product using the deodorant)

IT 471-34-1, Calcium carbonate, uses 1344-28-1, Aluminum oxide, uses
7631-86-9, Silicon oxide, uses 7778-18-9, Calcium sulfate
RL: NUU (Other use, unclassified); USES (Uses)
(hydrophilic adsorbent, in deodorant; adsorptive deodorant containing adsorbent and catalyst for air deodorization and deodorization product using the deodorant)

IT **7440-44-0, Carbon,** uses
RL: NUU (Other use, unclassified); USES (Uses)
(**activated,** hydrophobic adsorbent, in deodorant; adsorptive deodorant containing adsorbent and catalyst for air deodorization and deodorization product using the deodorant)

RN 7440-44-0 HCAPLUS

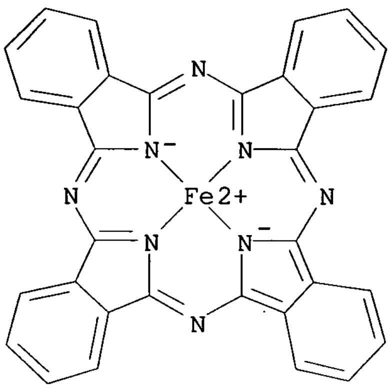
CN Carbon (7CI, 8CI, 9CI) (CA INDEX NAME)

C

IT **132-16-1 147-14-8,** Copper phthalocyanine
3317-67-7, Cobalt phthalocyanine **13463-67-7,** Titanium oxide, uses
RL: **CAT (Catalyst use)**; USES (Uses)
(catalyst, in adsorbent; adsorptive deodorant containing adsorbent and catalyst for air deodorization and deodorization product using the deodorant)

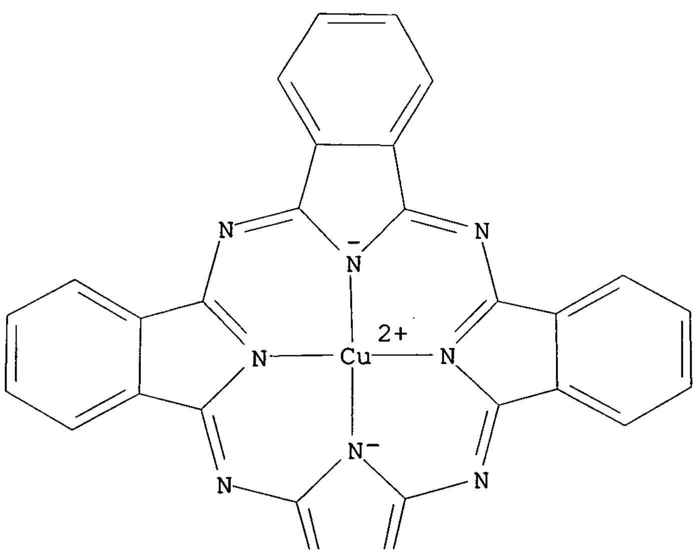
RN 132-16-1 HCAPLUS

CN Iron, [29H,31H-phthalocyaninato(2-)-κN29,κN30,κN31,.kapp
a.N32]-, (SP-4-1)- (9CI) (CA INDEX NAME)

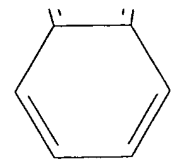


RN 147-14-8 HCAPLUS
CN Copper, [29H,31H-phthalocyaninato(2-)-κN29,κN30,κN31,.ka
ppa.N32]-, (SP-4-1)- (9CI) (CA INDEX NAME)

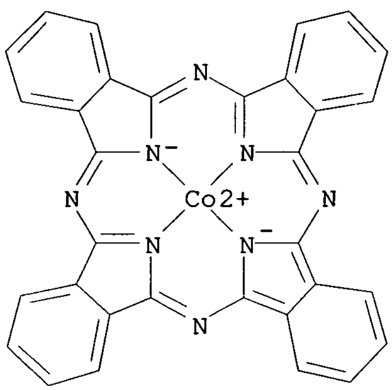
PAGE 1-A



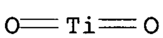
PAGE 2-A



RN 3317-67-7 HCAPLUS
CN Cobalt, [29H,31H-phthalocyaninato(2-)-κN29,κN30,κN31,.ka
ppa.N32]-, (SP-4-1)- (9CI) (CA INDEX NAME)



RN 13463-67-7 HCAPLUS
CN Titanium oxide (TiO_2) (8CI, 9CI) (CA INDEX NAME)



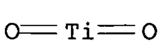
L111 ANSWER 5 OF 36 HCAPLUS COPYRIGHT 2005 ACS on STN
AN 2004:668136 HCAPLUS
ED Entered STN: 17 Aug 2004
TI Method for preparing visible-light catalytically degradable plastics
IN Zhu, Yongfa; Shang, Jing
PA Tsinghua University, Peop. Rep. China
SO Faming Zhuanli Shenqing Gongkai Shuomingshu, 6 pp.
CODEN: CNXXEV
DT Patent
LA Chinese
IC ICM C08J005-18
ICS C08K003-22; C08L101-12
CC 38-3 (Plastics Fabrication and Uses)
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	CN 1405214	A	20030326	CN 2002-146780	20021108
PRAI	CN 2002-146780		20021108		

CLASS
PATENT NO. CLASS PATENT FAMILY CLASSIFICATION CODES

CN 1405214	ICM	C08J005-18
	ICS	C08K003-22; C08L101-12

AB The method comprises mixing organic dye (such as **phthalocyanine Cu,** rhodamine B, or rose bengal) with **TiO2** nanoparticle (at a ratio of 1:12.5-100) in anhydrous ethanol and then drying to obtain **TiO2**/organic dye **composite** photocatalyst; mixing with plastic (such as polystyrene, polyethylene, polyvinyl chloride, or polypropylene) (at a ratio of 1:20-60) in THF, dropping on polytetrafluoroethylene plate, and drying in air.
ST plastic degradable visible light catalytic prepn
IT Fluoropolymers
RL: TEM (Technical or engineered material use); USES (Uses)
(method for preparing visible-light catalytically degradable plastic)
IT Photolysis **catalysts**
(nanoparticles; method for preparing visible-light catalytically degradable plastic)
IT Light-sensitive materials
(photodegradable, visible-light; method for preparing visible-light catalytically degradable plastic)
IT 9002-84-0, Polytetrafluoroethylene
RL: TEM (Technical or engineered material use); USES (Uses)
(board; method for preparing visible-light catalytically degradable plastic)
IT 9002-88-4, Polyethylene 9003-07-0, Polypropylene 9003-53-6, Polystyrene
RL: PRP (Properties); TEM (Technical or engineered material use); USES (Uses)
(method for preparing visible-light catalytically degradable plastic)
IT **13463-67-7, Titania**
RL: **CAT (Catalyst use)**; TEM (Technical or engineered material use); USES (Uses)
(nanoparticles; method for preparing visible-light catalytically degradable plastic)
IT 81-88-9, Rhodamine B 147-14-8, **Copper Phthalocyanine** 11121-48-5, Rose Bengal
RL: TEM (Technical or engineered material use); USES (Uses)
(nanoparticles; method for preparing visible-light catalytically degradable plastic)
IT **13463-67-7, Titania**
RL: **CAT (Catalyst use)**; TEM (Technical or engineered material use); USES (Uses)
(nanoparticles; method for preparing visible-light catalytically degradable plastic)
RN 13463-67-7 HCAPLUS
CN Titanium oxide (TiO2) (8CI, 9CI) (CA INDEX NAME)



L111 ANSWER 6 OF 36 HCAPLUS COPYRIGHT 2005 ACS on STN
AN 2003:726450 HCAPLUS
DN 139:323930
ED Entered STN: 17 Sep 2003
TI Photocatalytic Degradation of Polystyrene Plastic under Fluorescent Light
AU Shang, Jing; Chai, Ming; Zhu, Yongfa
CS Department of Chemistry, Tsinghua University, Beijing, 100084, Peop. Rep.

China

SO Environmental Science and Technology (2003), 37(19), 4494-4499
CODEN: ESTHAG; ISSN: 0013-936X

PB American Chemical Society

DT Journal

LA English

CC 35-8 (Chemistry of Synthetic High Polymers)
Section cross-reference(s): 38

AB Plastic is used widely all over the world, due to the fact that it is low cost, is easily processable, and has lightwt. properties. However, the hazard of discarding waste plastic, so-called "white pollution", is becoming more and more severe. In this paper, solid-phase photocatalytic degradation of polystyrene (PS) plastic, one of the most common com. plastics, over **copper phthalocyanine** (CuPc) sensitized **TiO2** photocatalyst (**TiO2**/CuPc) was investigated under fluorescent light irradiation in the air. UV-vis spectra show that **TiO2**/CuPc extends its photoresponse range to visible light, contrasting to only UV light absorption of pure **TiO2**. The PS photodegrdn. expts. exhibit that higher PS weight loss rate, lower PS average mol. weight, less amount of volatile organic compds., and more CO2 can be obtained in the system of PS-(**TiO2**/CuPc), in comparison with the PS-**TiO2** system. Therefore, PS photodegrdn. over **TiO2**/CuPc **composite** is more complete and efficient than over pure **TiO2**, suggesting the potential application of dye-sensitized **TiO2 catalyst** in the thorough photodegrdn. of PS plastic under fluorescent light. During the photodegrdn. of PS plastic, the reactive oxygen species generated on **TiO2** or **TiO2**/CuPc particle surfaces play important roles in chain scission. The present study demonstrates that the combination of polymer plastic with dye-sensitized **TiO2 catalyst** in the form of thin film is a practical and useful way to photodegraded plastic contaminants in the sunlight.

ST photocatalytic degrdn polystyrene fluorescent light; **titania copper phthalocyanine catalyst** photodegrdn polystyrene

IT Light
(fluorescent; photodegrdn. of polystyrene under fluorescent light in presence of **titania-copper phthalocyanine catalyst**)

IT Polymer degradation
Polymer degradation **catalysts**
(photochem.; photodegrdn. of polystyrene under fluorescent light in presence of **titania-copper phthalocyanine catalyst**)

IT Polymer morphology
(photodegrdn. of polystyrene under fluorescent light in presence of **titania-copper phthalocyanine catalyst**)

IT 147-14-8, **Copper phthalocyanine 13463-67-7, Titania**, uses
RL: **CAT (Catalyst use)**; PRP (Properties); USES (Uses)
(photodegrdn. of polystyrene under fluorescent light in presence of **titania-copper phthalocyanine catalyst**)

IT 9003-53-6, Polystyrene
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PROC (Process)
(photodegrdn. of polystyrene under fluorescent light in presence of

titania-copper phthalocyanine catalyst)

RE.CNT 31 THERE ARE 31 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

(1) Augugliaro, V; Appl Catal B 1999, V20, P15 HCAPLUS
(2) Cho, S; J Photochem Photobiol A 2001, V143, P221 HCAPLUS
(3) Crawford, K; J Phys Chem B 1997, V101, P864 HCAPLUS
(4) Dong, D; Polym Degrad Stab 2001, V72, P345 HCAPLUS
(5) Falaras, P; J Electrochem Soc 1993, V140, PL92 HCAPLUS
(6) Faravelli, T; J Anal Appl Pyrol 2001, V60, P103 HCAPLUS
(7) Giraudeau, A; J Am Chem Soc 1980, V102, P5137 HCAPLUS
(8) Hoffmann, M; Chem Rev 1995, V95, P69 HCAPLUS
(9) Imam, S; J Environ Polym Degrad 1998, V6, P91 HCAPLUS
(10) Iwasaki, M; J Colloid Interface Sci 2000, V224, P202 HCAPLUS
(11) Kaczmark, H; Eur Polym J 2000, V36, P1167
(12) Kamat, P; Chem Phys Lett 1983, V102, P379 HCAPLUS
(13) Kay, A; J Phys Chem 1993, V97, P6272 HCAPLUS
(14) Kuzina, S; Eur Polym J 1998, V34, P291 HCAPLUS
(15) Lee, S; J Anal Appl Pyrol 2002, V64, P71 HCAPLUS
(16) Lee, S; Polym Degrad Stab 2001, V74, P297 HCAPLUS
(17) Linsebigler, A; Chem Rev 1995, V95, P735 HCAPLUS
(18) Ogawa, H; J Electrochem Soc 1981, V128, P685 HCAPLUS
(19) O'Regan, B; Nature 1991, V353, P737 HCAPLUS
(20) Park, D; J Catal 1999, V185, P114 HCAPLUS
(21) Peral, J; J Catal 1992, V136, P554
(22) Peral, J; J Chem Technol Biotechnol 1997, V70, P117 HCAPLUS
(23) Rophael, M; Vacuum 1990, V41, P143 HCAPLUS
(24) Ross, H; Sol Energy Mater Sol Cells 1994, V33, P475 HCAPLUS
(25) Torikai, A; J Appl Polym Sci 1998, V67, P1293 HCAPLUS
(26) Vallint, G; J Gen Appl Microbiol 1994, V40, P445
(27) Wang, H; Chin Sci Bull 1994, V39, P424
(28) Wells, R; Macromolecules 1994, V27, P7465 HCAPLUS
(29) Wohrle, D; J Mol Catal 1992, V75, PL39
(30) Zhu, Y; Appl Surf Sci 2000, V158, P32 HCAPLUS
(31) Zhu, Y; Environ Sci Technol 2001, V35, P3113 HCAPLUS

IT **13463-67-7, Titania,** uses
RL: **CAT (Catalyst use)**; PRP (Properties); USES (Uses)
(photodegrdn. of polystyrene under fluorescent light in presence of **titania-copper phthalocyanine catalyst**)

RN 13463-67-7 HCAPLUS

CN Titanium oxide (TiO2) (8CI, 9CI) (CA INDEX NAME)

O=Ti=O

L111 ANSWER 7 OF 36 HCAPLUS COPYRIGHT 2005 ACS on STN DUPLICATE 1

AN 2003:976980 HCAPLUS

DN 141:40687

ED Entered STN: 15 Dec 2003

applicants

TI Method for **preparation** of non-platinum **composite catalyst** for cathode of fuel cell

IN Xing, Wei; Li, Xuguang; Lu, Tianhong

PA Changchun Research Institute of Applied Chemistry, Chinese Academy of Sciences, Peop. Rep. China

SO Faming Zhuanli Shenqing Gongkai Shuomingshu, 13 pp.
CODEN: CNXXEV

DT Patent
LA Chinese
IC ICM H01M004-88
ICS H01M004-90; B01J037-00
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	CN 1387274	A	20021225	CN 2002-123898	20020709
	US 2004058808	A1	20040325	US 2003-612336	20030703
PRAI	CN 2002-123898	A	20020709		

CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
CN 1387274	ICM	H01M004-88
	ICS	H01M004-90; B01J037-00

AB The method comprises: (1) preparation of a **C-carried TiO2** by the reaction of an ethanol solution of tetra-Bu titanate with HNO3-H2O-ethanol to obtain a sol and drying a mixture of the sol with **activated C** in vacuum, (2) mixing the obtained **C -carried TiO2** with an organic solution of a macrocyclic compound of a transition metal, filtering, and drying in vacuum, and (3) heat treatment of the obtained reaction product in Ar or N at 100-1100° for 0.5-6 h. The solvent used in step (2) is DMF, DMSO, cyclohexane, acetone, or pyridine anhydride; the transition metal is Fe, Co, Mn, Cu, or Zn; and the macrocyclic compound is the transition metal compound of porphyrin, phthalocyanine, Schiff base, annulene, or their derivative The **prepared catalyst** contains 40-80% **activated C**, and has a **TiO2**:transition metal macrocyclic compound 1-10:3-1.

ST fuel cell cathode **composite catalyst prepn**

IT **Schiff** bases
RL: **CAT (Catalyst use)**; USES (Uses)
(complexes, **manganese**; nonplatinum **composite catalyst** for fuel cell cathode)

IT Fuel cell cathodes
(nonplatinum **composite catalyst** for fuel cell cathode)

IT **7440-44-0, Activated carbon**, uses
RL: **CAT (Catalyst use)**; USES (Uses)
(**activated, catalyst support**; nonplatinum **composite catalyst** for fuel cell cathode)

IT **3317-67-7, Cobalt phthalocyanine** 7439-96-5D, **Manganese, Schiff** base complexes **13463-67-7, Titania**, uses **14172-91-9, Copper tetraphenylporphyrin 16591-56-3, Iron tetraphenylporphyrin** 50792-65-9 **98093-19-7**
RL: **CAT (Catalyst use)**; USES (Uses)
(nonplatinum **composite catalyst** for fuel cell cathode)

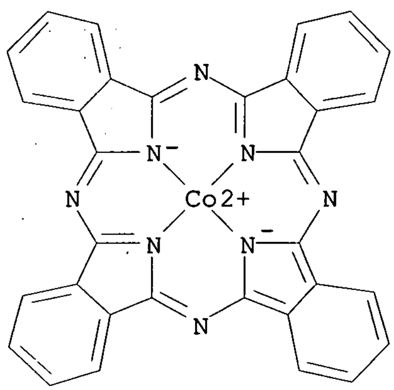
IT **7440-44-0, Activated carbon**, uses
RL: **CAT (Catalyst use)**; USES (Uses)
(**activated, catalyst support**; nonplatinum **composite catalyst** for fuel cell cathode)

RN 7440-44-0 HCAPLUS
CN Carbon (7CI, 8CI, 9CI) (CA INDEX NAME)

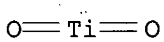
C

IT **3317-67-7, Cobalt phthalocyanine**
13463-67-7, Titania, uses **14172-91-9,**
Copper tetraphenylporphyrin 16591-56-3,
Iron tetraphenylporphyrin 98093-19-7
RL: **CAT (Catalyst use);** USES (Uses)
(nonplatinum **composite catalyst** for fuel cell cathode)

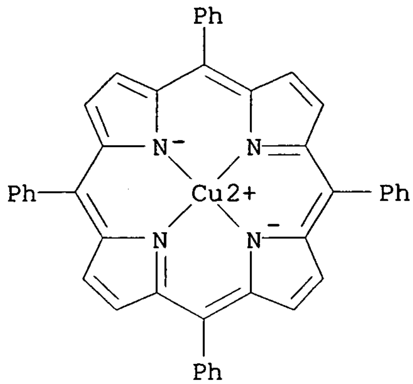
RN 3317-67-7 HCAPLUS
CN Cobalt, [29H,31H-phthalocyaninato(2-)-κN29,κN30,κN31,.ka
ppa.N32]-, (SP-4-1)- (9CI) (CA INDEX NAME)



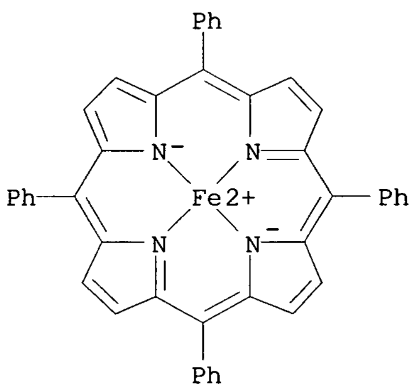
RN 13463-67-7 HCAPLUS
CN Titanium oxide (TiO2) (8CI, 9CI) (CA INDEX NAME)



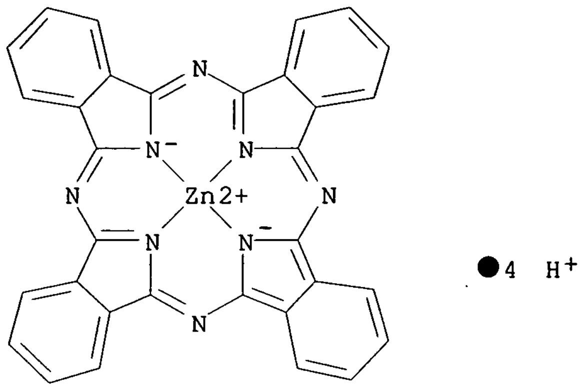
RN 14172-91-9 HCAPLUS
CN Copper, [5,10,15,20-tetraphenyl-21H,23H-porphinato(2-)-
κN21,κN22,κN23,κN24]-, (SP-4-1)- (9CI) (CA INDEX
NAME)



RN 16591-56-3 HCAPLUS
CN Iron, [5,10,15,20-tetraphenyl-21H,23H-porphinato(2-)-κN21,κN22,κN23,κN24]-, (SP-4-1)- (9CI) (CA INDEX NAME)



RN 98093-19-7 HCAPLUS
CN Zincate(4-), [29H,31H-phthalocyanine-C,C,C,C-tetracarboxylato(6-)-κN29,κN30,κN31,κN32]-, tetrahydrogen (9CI) (CA INDEX NAME)



$4 [D1-CO_2^-]$

L111 ANSWER 8 OF 36 WPIX COPYRIGHT 2005 THE THOMSON CORP on STN
AN 2003-031205 [03] WPIX
DNN N2003-024633 DNC C2003-007290
TI Proton-conducting electrolyte membrane and electrode unit used in fuel cell or stack, e.g. direct methanol or reformate fuel cell, comprises **composite** of porous glass substrate and ceramic material impregnated with proton conductor.
DC A85 E19 L03 X16
IN HENNIGE, V; HORPEL, G; HYING, C; HOERPEL, G
PA (CREA-N) CREAVIS GES TECHNOLOGIE & INNOVATION MBH
CYC 100
PI DE 10115928 A1 20021010 (200303)* 22 H01M008-02
WO 2002080297 A2 20021010 (200303) GE H01M008-10
RW: AT BE CH CY DE DK EA ES FI FR GB GH GM GR IE IT KE LS LU MC MW MZ NL OA PT SD SE SL SZ TR TZ UG ZM ZW
W: AE AG AL AM AT AU AZ BA BB BG BR BY BZ CA CH CN CO CR CU CZ DE DK DM DZ EC EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX MZ NO NZ OM PH PL PT RO RU SD SE SG SI SK SL TJ TM TN TR TT TZ UA UG US UZ VN YU ZA ZM ZW
AU 2002229750 A1 20021015 (200432) H01M008-10
ADT DE 10115928 A1 DE 2001-10115928 20010330; WO 2002080297 A2 WO 2002-EP1550 20020214; AU 2002229750 A1 AU 2002-229750 20020214
FDT AU 2002229750 A1 Based on WO 2002080297
PRAI DE 2001-10115928 20010330
IC ICM H01M008-02; H01M008-10
ICS C03C003-085; C03C003-091; H01M004-88
AB DE 10115928 A UPAB: 20030113
NOVELTY - Proton-conducting, flexible electrolyte membrane for a fuel cell, which is impermeable for the reaction components of the fuel cell reaction, comprises a permeable **composite** of a flexible, porous glass substrate and a porous ceramic material, which is infiltrated with proton-conducting material suitable for selective conduction of protons through the membrane.
DETAILED DESCRIPTION - INDEPENDENT CLAIMS are also included for the following:

(1) production of the electrolyte membrane;
(2) flexible membrane electrode unit for a fuel cell with electrically conducting anode and cathode layers on opposite sides of the membrane;
(3) production of this unit;
(4) compositions comprising a condensable component, which, by condensation, imparts proton conductivity to an anode or cathode layer of such a unit, a **catalyst** (precursor) for the anode or cathode reaction in a fuel cell and optionally a **catalyst** support, pore former and/or additives to improve the foaming property, viscosity and adhesion;
(5) fuel cells with the electrolyte membrane;
(6) fuel cells with the membrane electrode unit; and
(7) mobile or stationary systems with membrane electrode unit, fuel cell or fuel cell stack containing electrolyte membrane or membrane electrode unit.

USE - The electrolyte membrane is used in a fuel cells, especially a direct methanol fuel cell or reformate fuel cell, and for producing a membrane electrode unit, fuel cell or fuel cell stack; and the membrane electrode unit is used in a fuel cell of these types (all claimed). The mobile or stationary system preferably is a vehicle or domestic energy system (claimed).

ADVANTAGE - Existing electrolyte membranes either cannot be used at temperatures above 100 deg. C, as they are too permeable for methanol and allow crossover to the cathode side, or are subject to short circuits under practical conditions. The present flexible membranes have high proton conductivity and much lower water vapor permeability than polymer membranes and give membrane electrode units with low total resistance. Their mechanical properties, e.g. tensile strength and flexibility, make them suitable for use under extreme conditions, as encountered in vehicles. They tolerate operating temperatures of over 80 deg. C, avoid short circuit and cross-over problems and can be produced easily.
Dwg.0/0

FS CPI EPI
FA AB; DCN
MC CPI: A12-E06; E05-E; E05-G; E05-L01; E05-M; E31-K07; E31-P02D; E31-P03; E31-P06C; E31-P06D; E31-Q08; E34-C02; E35-K02; E35-L; L03-E04B; N02-E01; N02-F02
EPI: X16-C01C; X16-E06A

L111 ANSWER 9 OF 36 WPIX COPYRIGHT 2005 THE THOMSON CORP on STN
AN 2003-000804 [01] WPIX
DNN N2003-000355 DNC C2003-000562
TI Proton-conducting electrolyte membrane and electrode unit used in fuel cell or stack, e.g. direct methanol or reformate fuel cell, comprises **composite** of porous ceramic substrate and ceramic material impregnated with proton conductor.
DC A85 E19 L03 X16
IN HENNIGE, V; HORPEL, G; HYING, C; HOERPEL, G
PA (CREA-N) CREAVIS GES TECHNOLOGIE & INNOVATION MBH
CYC 100
PI DE 10115927 A1 20021010 (200301)* 21 H01M008-02
WO 2002080296 A2 20021010 (200301) GE H01M008-10
RW: AT BE CH CY DE DK EA ES FI FR GB GH GM GR IE IT KE LS LU MC MW MZ NL OA PT SD SE SL SZ TR TZ UG ZM ZW
W: AE AG AL AM AT AU AZ BA BB BG BR BY BZ CA CH CN CO CR CU CZ DE DK DM DZ EC EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX MZ NO NZ OM PH PL PT RO RU SD SE SG SI SK SL TJ TM TN TR TT TZ UA UG US UZ VN YU ZA ZM

ZW
AU 2002246091 A1 20021015 (200432) H01M008-10
ADT DE 10115927 A1 DE 2001-10115927 20010330; WO 2002080296 A2 WO 2002-EP1549 20020214; AU 2002246091 A1 AU 2002-246091 20020214
FDT AU 2002246091 A1 Based on WO 2002080296
PRAI DE 2001-10115927 20010330
IC ICM H01M008-02; H01M008-10
ICS C04B041-81; H01M004-88
AB DE 10115927 A UPAB: 20030101
NOVELTY - Proton-conducting, flexible electrolyte membrane for a fuel cell, which is impermeable for the reaction components of the fuel cell reaction, comprises a permeable **composite** of a flexible, porous ceramic substrate and a porous ceramic material, which is infiltrated with proton-conducting material suitable for selective conduction of protons through the membrane.

DETAILED DESCRIPTION - INDEPENDENT CLAIMS are also included for the following:

(1) production of the electrolyte membrane;

(2) flexible membrane electrode unit for a fuel cell with electrically conducting anode and cathode layers on opposite sides of the membrane;

(3) production of this unit;

(4) compositions comprising a condensable component, which, by condensation, imparts proton conductivity to an anode or cathode layer of such a unit, a **catalyst** (precursor) for the anode or cathode reaction in a fuel cell and optionally a **catalyst** support, pore former and/or additives to improve the foaming property, viscosity and adhesion;

(5) fuel cells with the electrolyte membrane;

(6) fuel cells with the membrane electrode unit; and

(7) mobile or stationary systems with membrane electrode unit, fuel cell or fuel cell stack containing electrolyte membrane or membrane electrode unit.

USE - The electrolyte membrane is used in a fuel cell, especially a direct methanol fuel cell or reformate fuel cell, and for producing a membrane electrode unit, fuel cell or fuel cell stack; and the membrane electrode unit is used in a fuel cell of these types (all claimed). The mobile or stationary system preferably is a vehicle or domestic energy system (claimed).

ADVANTAGE - Existing electrolyte membranes either cannot be used at temperatures above 100 deg. C, as they are too permeable for methanol and allow crossover to the cathode side, or are subject to short circuits under practical conditions. The present flexible membranes have high proton conductivity and much lower water vapor permeability than polymer membranes and can be made thinner than the latter. They give membrane electrode units with low total resistance. Their mechanical properties, e.g. tensile strength and flexibility, make them suitable for use under extreme conditions, as encountered in vehicles. They tolerate operating temperatures of over 80 deg. C, avoid short circuit and cross-over problems and can be produced easily.
Dwg.0/0
FS CPI EPI
FA AB; DCN
MC CPI: A12-E06; E05-E; E05-G; E05-L01; E05-M; E31-K07; E31-P03; E31-P06C; E31-P06D; E34-C02; E35-L; L03-E04A; L03-E04B; N02-E01; N02-F02
EPI: X16-E06

L111 ANSWER 10 OF 36 HCAPLUS COPYRIGHT 2005 ACS on STN
AN 2002:704497 HCAPLUS

DN 138:46236
ED Entered STN: 17 Sep 2002
TI The use of **carbon** paste electrodes modified with **cobalt** tetrasulfonated **phthalocyanine** adsorbed in silica/ **titania** for the reduction of oxygen
AU Castellani, A. M.; Goncalves, J. E.; Gushikem, Y.
CS Instituto de Quimica, Unicamp, Sao Paulo, 13083-970, Brazil
SO Journal of New Materials for Electrochemical Systems (2002), 5(3), 169-172
CODEN: JMESFQ; ISSN: 1480-2422
PB Journal of New Materials for Electrochemical Systems
DT Journal
LA English
CC 72-2 (Electrochemistry)
Section cross-reference(s): 66, 67, 78, 79
AB **Co**(II) **tetrasulfophthalocyanine** complex (CoTsPc) was immobilized in a SiO2/**TiO2** (SiTi) matrix. This immobilization was carried out by adding the phthalocyanine during the SiTi synthesis, when the **composite** was still a gel. The amount of the complex immobilized, 240 µmol.g-1, was determined by atomic absorption spectroscopy of Co. The sp. surface area was SBET = 411 m2 g-1. The electrochem. studies were carried out with the matrix using a C paste electrode and it presented catalytic activity in the electroredn. of oxygen with the reduction potential of oxygen at -180 mV, at pH 7, in a 1.0 mol L-1 KCl solution The plot of the cathodic current intensities against dissolved oxygen concns., in the range between 0.7 to 11 mg.L-1, showed a linear correlation.
ST **carbon** paste electrode **cobalt** tetrasulfonated **phthalocyanine** immobilized silica **titania;** oxygen redn **cobalt** tetrasulfonated **phthalocyanine** immobilized silica **titania electrocatalyst**
IT Chemically modified electrodes
(**carbon** paste modified with **cobalt** tetrasulfonated **phthalocyanine** immobilized in silica/**titania** matrix)
IT Reduction **catalysts**
(electrochem.; **cobalt** tetrasulfonated **phthalocyanine** immobilized in silica/**titania** matrix using **carbon** paste electrode)
IT Surface area
(of **carbon** paste electrodes modified with **cobalt** tetrasulfonated **phthalocyanine** immobilized in silica/ **titania** matrix)
IT Cyclic voltammetry
(of **cobalt** tetrasulfonated **phthalocyanine** immobilized in silica/**titania** matrix at various oxygen concns.)
IT UV and visible spectra
(of **cobalt** tetrasulfonated **phthalocyanine** immobilized in silica/**titania** matrix suspended in liquid paraffin)
IT Reduction, electrochemical
(of oxygen on **carbon** paste electrode modified with **cobalt** tetrasulfonated **phthalocyanine** immobilized in silica/**titania** matrix)
IT Reduction potential
(of oxygen on **cobalt** tetrasulfonated **phthalocyanine** immobilized in silica/**titania** matrix in KCl solution at various pH)
IT **7440-44-0, Carbon,** uses 7631-86-9, Silica, uses
13463-67-7, Titania, uses **29012-54-2**
RL: **CAT (Catalyst use);** DEV (Device component use); PRP

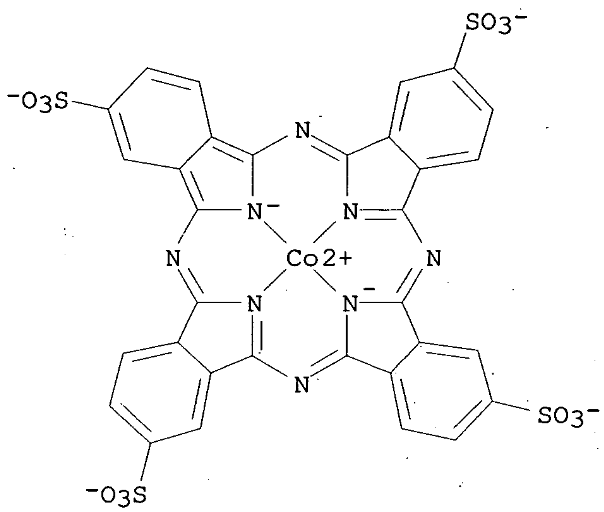
(Properties); USES (Uses)
(**carbon** paste electrodes modified with **cobalt** tetrasulfonated **phthalocyanine** immobilized in silica/ **titania** matrix for **electrocatalyst** for oxygen reduction)
IT 7782-44-7, Oxygen, properties
RL: PRP (Properties); RCT (Reactant); RACT (Reactant or reagent)
(**carbon** paste electrodes modified with **cobalt** tetrasulfonated **phthalocyanine** immobilized in silica/ **titania** matrix for **electrocatalyst** for oxygen reduction)
IT 7782-42-5, Graphite, uses
RL: **CAT (Catalyst use)**; DEV (Device component use); PRP (Properties); USES (Uses)
(powder; in electrodes modified with **cobalt** tetrasulfonated **phthalocyanine** immobilized in silica/**titania** matrix for **electrocatalyst** for oxygen reduction)
IT 7447-40-7, Potassium chloride (KCl), uses
RL: NUU (Other use, unclassified); PRP (Properties); USES (Uses)
(reduction potential of oxygen on **cobalt** tetrasulfonated **phthalocyanine** immobilized in silica/**titania** matrix in KCl solution)
RE.CNT 20 THERE ARE 20 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE
(1) Alfaya, A; Chem Mater 1998, V10, P909 HCAPLUS
(2) Castellani, A; J Col Surf Interf Sci 2000, V3203, P195
(3) Delmarre, D; J Luminesc 1999, V82, P57 HCAPLUS
(4) Ebadi, M; Can J Chem 2001, V79, P992 HCAPLUS
(5) Fuqua, P; J Sol-Gel Sci Technol 1998, V11, P241 HCAPLUS
(6) Ilharco, L; J Sol-Gel Sci Technol 1987, V8, P877
(7) Isaacs, M; Electrochim Acta 1998, V43, P1821 HCAPLUS
(8) Kobayashi, N; Inorg Chem 1992, V31, P5172 HCAPLUS
(9) Langhendries, G; Chem Eng, Sci 1999, V54, P3563 HCAPLUS
(10) Maruszewski, K; J Mol Struct 2000, V519, P125 HCAPLUS
(11) Okada, T; J Electrochem Soc 1998, V145, P815 HCAPLUS
(12) Pessoa, C; J Electroanal Chem 1999, V477, P158 HCAPLUS
(13) Pucceti, G; J Non-Cryst Solids 1999, V258, P57
(14) Ribeiro, A; J Non-Cryst Solids 2000, V273, P1968
(15) Ribeiro, E; Eelctrochim Acta 1999, V44, P3589 HCAPLUS
(16) Seelan, S; J Mol Catal A: Chem 2000, V157, P163 HCAPLUS
(17) Sorokin, A; Catal Today 2000, V57, P45 HCAPLUS
(18) Weber, J; Inorg Chem 1965, V4, P496
(19) Xia, H; Opt Mat 2000, V15, P93 HCAPLUS
(20) Zagal, J; Coord Chem Revs 1992, V119, P89 HCAPLUS
IT **7440-44-0, Carbon,** uses **13463-67-7, Titania,** uses **29012-54-2**
RL: **CAT (Catalyst use)**; DEV (Device component use); PRP (Properties); USES (Uses)
(**carbon** paste electrodes modified with **cobalt** tetrasulfonated **phthalocyanine** immobilized in silica/ **titania** matrix for **electrocatalyst** for oxygen reduction)
RN 7440-44-0 HCAPLUS
CN Carbon (7CI, 8CI, 9CI) (CA INDEX NAME)

C

RN 13463-67-7 HCAPLUS
CN Titanium oxide (TiO2) (8CI, 9CI) (CA INDEX NAME)

O═Ti═O

RN 29012-54-2 HCAPLUS
CN Cobaltate(4-), [29H,31H-phthalocyanine-2,9,16,23-tetrasulfonato(6-)-κN29,κN30,κN31,κN32]-, (SP-4-1)- (9CI) (CA INDEX NAME)



L111 ANSWER 11 OF 36 HCAPLUS COPYRIGHT 2005 ACS on STN
AN 2002:535653 HCAPLUS
DN 137:269631
ED Entered STN: 18 Jul 2002
TI **Cobalt**(II) **hematoporphyrin** IX and **protoporphyrin** IX complexes immobilized on highly dispersed titanium(IV) oxide on a cellulose microfiber surface: electrochemical properties and dissolved oxygen reduction study
AU Dias, Silvio L. P.; Gushikem, Yoshitaka; Ribeiro, Emerson S.; Benvenutti, Edilson V.
CS Unicamp, Instituto de Quimica, CP 6154, SP, Campinas, 13083-970, Brazil
SO Journal of Electroanalytical Chemistry (2002), 523(1-2), 64-69
CODEN: JECHES
PB Elsevier Science B.V.
DT Journal
LA English
CC 72-2 (Electrochemistry)
Section cross-reference(s): 67, 78
AB Hematoporphyrin IX (8,13-bis(1-hydroxyethyl)-3,7,12,17-tetramethyl-21H-23H-porphine-2,18-dipropionic acid) and protoporphyrin IX (8,13-divinyl-3,7,12,17-tetramethyl-21H-23H-porphine-2,18-dipropionic acid) were efficiently immobilized on a cellulose/titanium (IV) oxide **composite** fiber surface by the reaction of the porphyrin -COOH groups with **TiO2**, presumably by forming the -COO-Ti chemical bond. Also, **Co**(II) was incorporated into the **porphyrin** ring, with this reaction being followed by UV-visible spectra in the solid state and confirmed by the change of the absorption bands due to a local symmetry change from D2h to D4h upon metalation of the porphyrin ring.

Electrochem. studies by using cyclic voltammetry and chronoamperometry techniques, showed that the immobilized complexes catalyzed O2 reduction at -0.18 V for hematoporphyrin and -0.20 V for protoporphyrin in 1 mol L-1 KCl solution at pH 6. The cathodic current peak intensities plotted against O2 concns. at 0.5-13 mg L-1, showed a linear correlation. Rotating disk expts. were carried out to estimate the number of electrons involved on the process. For both modified electrodes, dissolved O2 was reduced to H2O2 in a two-electron process.

ST **cobalt hematoporphyrin protoporphyrin** immobilized **titania** cellulose microfiber oxygen electroredn

IT Reduction **catalysts**
(electrochem.; cellulose microfiber/**titania composite** with immobilized **cobalt hematoporphyrin** IX and **cobalt protoporphyrin** IX for oxygen)

IT Surface structure
(of cellulose microfiber/**titania composite**)

IT Cyclic voltammetry
(of cellulose microfiber/**titania composite** with immobilized **hematoporphyrin** and **protoporphyrin** and **cobalt** complexes in KCl solution containing oxygen)

IT Chronoamperometry
(of cellulose microfiber/**titania composite** with immobilized **hematoporphyrin cobalt** complexes in KCl solution containing oxygen)

IT Reduction, electrochemical
(of oxygen on cellulose microfiber/**titania composite** with immobilized **cobalt hematoporphyrin** IX and **cobalt protoporphyrin** IX in KCl solution)

IT 9004-34-6, Cellulose, uses
RL: **CAT (Catalyst use)**; DEV (Device component use); PRP (Properties); USES (Uses)
(**cobalt**(II) **hematoporphyrin** IX and **protoporphyrin** IX complexes immobilized on highly dispersed **titania** on a cellulose microfiber surface in oxygen electroredn. study)

IT 7447-40-7, Potassium chloride (KCl), uses
RL: NUU (Other use, unclassified); PRP (Properties); USES (Uses)
(cyclic voltammetry of cellulose microfiber/**titania composite** with immobilized **hematoporphyrin** and **protoporphyrin** and **cobalt** complexes in KCl solution containing oxygen)

IT 7782-44-7, Oxygen, properties
RL: PRP (Properties); RCT (Reactant); RACT (Reactant or reagent)
(**electrocatalytic** reduction on cellulose microfiber/ **titania composite** with immobilized **cobalt hematoporphyrin** IX and **cobalt protoporphyrin** IX)

IT 7722-84-1, Hydrogen peroxide, properties
RL: FMU (Formation, unclassified); PRP (Properties); FORM (Formation, nonpreparative)
(formation in oxygen reduction on cellulose microfiber/**titania composite** with immobilized **cobalt hematoporphyrin** IX and **cobalt protoporphyrin** IX)

IT **7440-44-0, Carbon,** uses
RL: **CAT (Catalyst use)**; DEV (Device component use); USES (Uses)
(paste electrode containing cellulose microfiber/**titania composite** with immobilized **cobalt hematoporphyrin** IX and **cobalt protoporphyrin**

IX)
IT **13463-67-7DP, Titania**, hydrolyzed, reaction products
with **cobalt hematoporphyrin** IX and **cobalt**
protoporphyrin IX **14325-03-2DP, Cobalt**(II)
protoporphyrin IX, reaction product with **titania**
30137-73-6DP, reaction products with **titania**
RL: **CAT (Catalyst use)**; DEV (Device component use); PNU
(Preparation, unclassified); PRP (Properties); PREP (Preparation); USES
(Uses)
(preparation and oxygen electroredn. **electrocatalyst** from
complexes immobilized on highly dispersed **titania** on
cellulose microfiber surface)
IT 553-12-8D, Protoporphyrin IX, reaction products with **titania**
14459-29-1D, Hematoporphyrin IX, reaction products with **titania**
RL: DEV (Device component use); PRP (Properties); RCT (Reactant); RACT
(Reactant or reagent); USES (Uses)
(reaction with cobalt and oxygen electrochem. reduction on complexes
immobilized on highly dispersed **titania** on cellulose
microfiber surface)
RE.CNT 42 THERE ARE 42 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE
(1) Adler, A; J Inorg Nucl Chem 1970, V32, P2445
(2) Anon; Chemical Sensors 1988
(3) Bard, A; Electrochemical Methods 1980
(4) Castelani, A; J Colloid Interface Sci 2000, V230, P195
(5) Chan, R; Inorg Chem 1985, V24, P3777 HCAPLUS
(6) Chatterjee, S; Polymer 1993, V34, P1979 HCAPLUS
(7) Chung, T; J Electroanal Chem 2001, V508, P115 HCAPLUS
(8) Corwin, A; J Am Chem Soc 1968, V90, P6577 HCAPLUS
(9) da Silva, L; Colloids Surf B 1996, V6, P309 HCAPLUS
(10) da Silva, L; Quim Nova 1995, V8, P337
(11) Denofre, S; Eur J Solid State Inorg Chem 1991, V28, P1295 HCAPLUS
(12) Dong, S; Electroanalysis 1987, V1, P99
(13) Durand, R; J Am Chem Soc 1983, V105, P2710 HCAPLUS
(14) Durand, R; J Electroanal Chem 1982, V134, P273 HCAPLUS
(15) Fu, X; Colloids Surf A 2001, V178, P151 HCAPLUS
(16) Gorton, L; Electroanalysis 1995, V7, P23 HCAPLUS
(17) Gushikem, Y; J Braz Chem Soc 1998, V9, P273 HCAPLUS
(18) Gushikem, Y; Polymers Interfaces and Emulsions 1999, P509
(19) Kalcher, K; Electroanalysis 1995, V7, P5 HCAPLUS
(20) Kang, C; J Electroanal Chem 1996, V413, P165 HCAPLUS
(21) Karlin, K; Progress in Inorganic Chemistry 1987, V35, P219 HCAPLUS
(22) Kibbey, C; Anal Chem 1993, V65, P2189 HCAPLUS
(23) Kubota, L; Langmuir 1995, V11, P1009 HCAPLUS
(24) Kurokawa, Y; Biotechnol Bioeng 1993, V42, P394 HCAPLUS
(25) Ni, C; J Phys Chem 1987, V91, P1158 HCAPLUS
(26) Ohmori, Y; J Biotechnol 1994, V33, P205 HCAPLUS
(27) Pessoa, C; J Electroanal Chem 1999, V477, P158 HCAPLUS
(28) Pottier, R; Can J Spectrosc 1988, V33, P57 HCAPLUS
(29) Ribeiro, E; Electrochim Acta 1999, V44, P3549
(30) Rodrigues-Filho, U; Chem Mater 1996, V8, P1375 HCAPLUS
(31) Rodrigues-Filho, U; Langmuir 1994, V10, P4357 HCAPLUS
(32) Shi, C; Inorg Chem 1992, V31, P5078 HCAPLUS
(33) Shi, C; Inorg Chem 1996, V35, P7928 HCAPLUS
(34) Shi, C; Inorg Chem 1997, V36, P4294 HCAPLUS
(35) Shi, C; Inorg Chem 1998, V37, P1037 HCAPLUS
(36) Silva, L; J Appl Polym Sci 1995, V58, P1669
(37) Song, E; Langmuir 1998, V14, P4315 HCAPLUS
(38) Steiger, B; Inorg Chem 2000, V39, P4579 HCAPLUS

(39) Xiao, J; J Liq Chrom Rel Technol 1996, V19, P2001
(40) Yabuki, S; Biosen Bioelectron 1991, V6, P311 HCAPLUS
(41) Yamamoto, K; J Inorg Organomet 1999, VP 9, P231
(42) Yuasa, M; Polym Adv Technol 2001, V12, P266 HCAPLUS

IT **7440-44-0, Carbon,** uses
RL: **CAT (Catalyst use)**; DEV (Device component use); USES (Uses)
(paste electrode containing cellulose microfiber/**titania composite** with immobilized **cobalt hematoporphyrin** IX and **cobalt protoporphyrin** IX)

RN 7440-44-0 HCAPLUS
CN Carbon (7CI, 8CI, 9CI) (CA INDEX NAME)

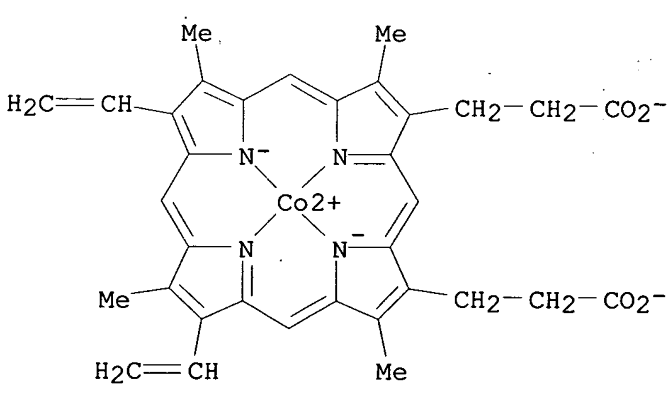
C

IT **13463-67-7DP, Titania,** hydrolyzed, reaction products with **cobalt hematoporphyrin** IX and **cobalt protoporphyrin** IX **14325-03-2DP, Cobalt**(II) **protoporphyrin** IX, reaction product with **titania**
RL: **CAT (Catalyst use)**; DEV (Device component use); PNU (Preparation, unclassified); PRP (Properties); PREP (Preparation); USES (Uses)
(preparation and oxygen electroredn. **electrocatalyst** from complexes immobilized on highly dispersed **titania** on cellulose microfiber surface)

RN 13463-67-7 HCAPLUS
CN Titanium oxide (TiO_2) (8CI, 9CI) (CA INDEX NAME)

O=Ti=O

RN 14325-03-2 HCAPLUS
CN Cobaltate(2-), [7,12-diethenyl-3,8,13,17-tetramethyl-21H,23H-porphine-2,18-dipropanoato(4-)-κN21,κN22,κN23,κN24]-, dihydrogen, (SP-4-2)- (9CI) (CA INDEX NAME)



●2 H^+

L111 ANSWER 12 OF 36 HCAPLUS

AN 2001:252698 HCAPLUS
DN 135:61662
ED Entered STN: 10 Apr 2001
TI Synthesis of polymeric and low molecular weight phthalocyanines from nitriles and metal carbonyls on SiO2 and **TiO2** and catalytic activities in the sulfide oxidation
AU Wohrle, D.; Suvorova, O. N.; Trombach, N.; Schupak, E. A.; Gerdes, R.; Semenov, N. M.; Bartels, O.; Zakurazhnov, A. A.; Schnurpfeil, G.; Hild, O.; Wendt, A.
CS Universitat Bremen, Institut fur Organische und Makromolekulare Chemie, Bremen, 28334, Germany
SO Journal of Porphyrins and Phthalocyanines (2001), 5(4), 381-389
CODEN: JPPHFZ; ISSN: 1088-4246
PB John Wiley & Sons Ltd.
DT Journal
LA English
CC 35-5 (Chemistry of Synthetic High Polymers)
Section cross-reference(s): 78
AB A new method for coatings of polymeric phthalocyanines and for comparison also of low mol. weight phthalocyanine metal complexes (W, Cr, Mo, Co) on quartz and **titanium dioxide** was developed by the reaction of metal carbonyls adsorbed on the carriers with tetracarbonitriles or phthalonitrile. By UV-vis or IR spectra the formation of structural uniform polymeric phthalocyanines on the carriers is established. The compds. are used then to compare their catalytic and photocatalytic activities in the oxidation of sulfide as test reaction.
ST phthalocyanine transition metal complex supported catalyst oxidn; quartz support phthalocyanine metal complex catalyst oxidn; **titania** support phthalocyanine metal complex catalyst oxidn; sulfide oxidn catalyst supported phthalocyanine metal complex
IT Oxidation **catalysts**
(**synthesis** of polymeric and low-mol.-weight phthalocyanines from nitriles and metal carbonyls on SiO2 and **TiO2** and catalytic activities in sulfide oxidation)
IT **13463-67-7, Titanium dioxide,** uses
14808-60-7, Quartz, uses
RL: CAT (Catalyst use); USES (Uses)
(synthesis of polymeric and low-mol.-weight phthalocyanines from nitriles and metal carbonyls on SiO2 and **TiO2** and catalytic activities in sulfide oxidation)
IT 712-74-3DP, 1,2,4,5-Tetracyanobenzene, polymeric reaction products with transition metal carbonyls **3317-67-7P** 10210-68-1DP, polymeric reaction products with tetranitriles 13007-92-6DP, Chromium hexacarbonyl, polymeric reaction products with tetranitriles 13939-06-5DP, Molybdenum hexacarbonyl, polymeric reaction products with tetranitriles 14040-11-0DP, Tungsten hexacarbonyl, polymeric reaction products with tetranitriles 14285-60-0P 15152-82-6P 30335-15-0P 38791-68-3DP, polymeric reaction products with transition metal carbonyls
RL: **CAT (Catalyst use)**; SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
(synthesis of polymeric and low-mol.-weight phthalocyanines from nitriles and metal carbonyls on SiO2 and **TiO2** and catalytic activities in sulfide oxidation)
IT 91-15-6, Phthalonitrile 1313-82-2, Sodium sulfide, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(synthesis of polymeric and low-mol.-weight phthalocyanines from nitriles

and metal carbonyls on SiO2 and **TiO2** and catalytic activities in sulfide oxidation)

RE.CNT 33 THERE ARE 33 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE
(1) An, H; Z Chem Rev 1994, V94, P939 HCAPLUS
(2) Ashida, M; J Polym Sci, Polym Chem Ed 1989, V27, P3883 HCAPLUS
(3) Bailay, D; Chem Rev 1981, V81, P111
(4) Bannehr, R; Makromol Chem 1981, V182, P2633 HCAPLUS
(5) Boas, J; Aust J Chem 1974, V27, P7 HCAPLUS
(6) Ciardelli, F; Macromolecule Metal Complexes 1995
(7) Dannenberg, S; Arch Microbiol 1992, V158, P93 HCAPLUS
(8) Elvers, B; Ullmann's Encyclopedia of Industrial Chemistry, 5th edition 1989, VA13, P467
(9) Fischer, H; Chem Eng Technol 1997, V20, P462 HCAPLUS
(10) Fischer, H; Chem Eng Technol 1997, V20, P624 HCAPLUS
(11) Gribov, B; Organometallic Compounds in Microelectronics 1972
(12) Hanack, M; Chem Ber 1986, V119, P1281 HCAPLUS
(13) Hong, A; Environ Sci Technol 1989, V23, P533 HCAPLUS
(14) Kochetkova, R; Zh Prikl Khim 1985, V58, P1153
(15) Kodas, T; The Chemistry of Metal CVD 1994
(16) Leznoff, C; Phthalocyanines-Properties and Applications 1989-1996, V1-4
(17) Meyers, R; Handbook of Petroleum Refining Processes 1986
(18) Moser, F; Phthalocyanine Compounds 1963
(19) Sasmaz, S; Dyes and Pigments 1999, V42, P117 HCAPLUS
(20) Spiller, W; J Photochem Photobiol A: Chem 1996, V95, P161 HCAPLUS
(21) Spirina, I; Russ Chem Rev 1994, V63, P43 HCAPLUS
(22) Wilkenson, F; J Phys Chem Ref Data 1993, V22, P113
(23) Wohrle, D; Ber Bunsenges Phys Chem 1987, V91, P975
(24) Wohrle, D; J Mol Catal 1983, V21, P255
(25) Wohrle, D; Makromol Chem 1985, V186, P2209
(26) Wohrle, D; Makromol Chem 1988, V189, P1167
(27) Wohrle, D; Makromol Chem 1989, V190, P961
(28) Wohrle, D; Makromol Chem, Macromol Symp 1987, V8, P195
(29) Wohrle, D; Phthalocyanines-Properties and Applications 1989
(30) Wohrle, D; Z Naturforsch B 1986, V41, P179
(31) Yanagi, H; Bull Chem Soc Jpn 1988, V61, P2313 HCAPLUS
(32) Yanagi, H; J Electrochem Soc 1993, V140, P1942 HCAPLUS
(33) Yanagi, H; Makromol Chem 1992, V193, P1903 HCAPLUS

IT **13463-67-7, Titanium dioxide,** uses
RL: CAT (Catalyst use); USES (Uses)
(synthesis of polymeric and low-mol.-weight phthalocyanines from nitriles and metal carbonyls on SiO2 and **TiO2** and catalytic activities in sulfide oxidation)

RN 13463-67-7 HCAPLUS

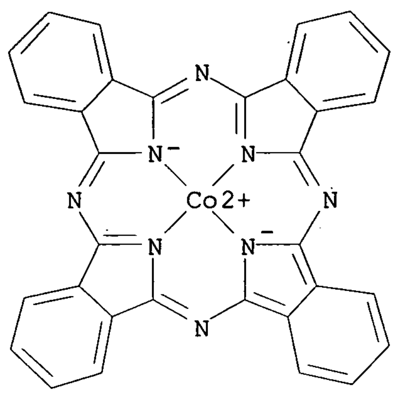
CN Titanium oxide (TiO2) (8CI, 9CI) (CA INDEX NAME)

O=Ti=O

IT **3317-67-7P**
RL: **CAT (Catalyst use)**; SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
(synthesis of polymeric and low-mol.-weight phthalocyanines from nitriles and metal carbonyls on SiO2 and **TiO2** and catalytic activities in sulfide oxidation)

RN 3317-67-7 HCAPLUS

CN Cobalt, [29H,31H-phthalocyaninato(2-)-κN29,κN30,κN31,.ka ppa.N32]-, (SP-4-1)- (9CI) (CA INDEX NAME)



L111 ANSWER 13 OF 36 HCAPLUS COPYRIGHT 2005 ACS on STN
AN 2000:861598 HCAPLUS
DN 134:30909
ED Entered STN: 08 Dec 2000
TI Substrate-**supported** aligned **carbon** nanotube films
IN Mau, Albert; Dai, Li-Ming; Shaoming, Huang
PA Commonwealth Scientific and Industrial Research Organisation, Australia
SO PCT Int. Appl., 19 pp.
CODEN: PIXXD2
DT Patent
LA English
IC C01B031-02; D01F009-12; D01F009-127
CC 49-1 (Industrial Inorganic Chemicals)
Section cross-reference(s): 57, 67
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2000073204	A1	20001207	WO 2000-AU550	20000525
	W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI				
	RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
	EP 1198414	A2	20020424	EP 2000-926581	20000525
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL				
	JP 2003500325	T2	20030107	JP 2000-621280	20000525
	AU 759314	B2	20030410	AU 2000-45284	20000525
	TW 499395	B	20020821	TW 2000-89110217	20000526
PRAI	AU 1999-650	A	19990528		
	WO 2000-AU550	W	20000525		

CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
WO 2000073204	IC	C01B031-02IC D01F009-12IC D01F009-127

AB Substrate-**supported** aligned **carbon** nanotube films are
prepared by synthesizing a layer of aligned carbon nanotubes on a substrate

capable of supporting nanotube growth, applying a layer of a second substrate to a top surface of the aligned carbon nanotube layer, and peeling off the substrate capable of supporting nanotube growth, to provide an aligned **carbon** nanotube film **supported** on the second substrate.

ST carbon nanotube aligned film substrate supported

IT Nanotubes
RL: IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); PREP (Preparation); PROC (Process)
(**carbon** fibers, fibrils; substrate-**supported** aligned **carbon** nanotube films)

IT Nanotubes
RL: IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); PREP (Preparation); PROC (Process)
(**carbon**; substrate-**supported** aligned **carbon** nanotube films)

IT Vapor deposition process
(chemical; substrate-**supported** aligned **carbon** nanotube films)

IT Carbon fibers, preparation
RL: IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); PREP (Preparation); PROC (Process)
(nanotube, fibrils; substrate-**supported** aligned **carbon** nanotube films)

IT Ceramics
Thermal decomposition catalysts
(substrate-**supported** aligned **carbon** nanotube films)

IT Transition metals, uses
RL: CAT (Catalyst use); USES (Uses)
(substrate-**supported** aligned **carbon** nanotube films)

IT Alkanes, reactions
Alkenes, reactions
Alkynes
Aromatic hydrocarbons, reactions
RL: PEP (Physical, engineering or chemical process); RCT (Reactant); PROC (Process); RACT (Reactant or reagent)
(substrate-**supported** aligned **carbon** nanotube films)

IT Glass, uses
Mica-group minerals, uses
Polymers, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(substrate-**supported** aligned **carbon** nanotube films)

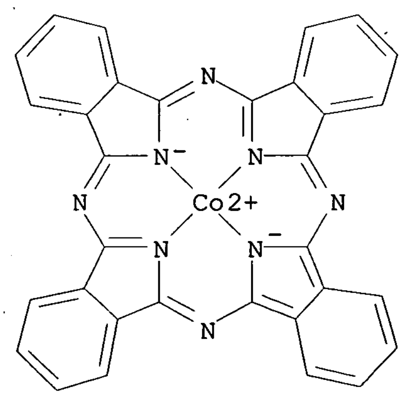
IT Organometallic compounds
RL: CAT (Catalyst use); PEP (Physical, engineering or chemical process); RCT (Reactant); PROC (Process); RACT (Reactant or reagent); USES (Uses)
(transition metal; substrate-**supported** aligned **carbon** nanotube films)

IT **3317-67-7**, Cobalt(II) phthalocyanine 14055-02-8, Nickel(II) phthalocyanine
RL: **CAT (Catalyst use)**; USES (Uses)
(substrate-**supported** aligned **carbon** nanotube films)

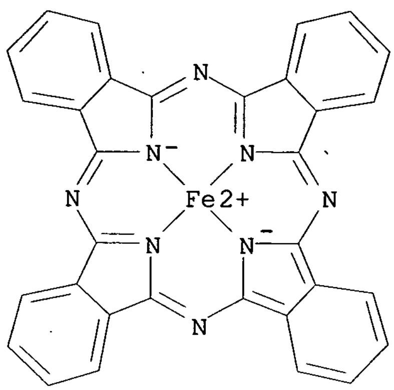
IT 102-54-5, Ferrocene **132-16-1**, Iron(II) phthalocyanine 1271-28-9, Nickel, dicyclopentadienyl-
RL: **CAT (Catalyst use)**; PEP (Physical, engineering or chemical process); RCT (Reactant); PROC (Process); RACT (Reactant or reagent); USES (Uses)
(substrate-**supported** aligned **carbon** nanotube films)

IT 7429-90-5, Aluminum, uses 7439-89-6, Iron, uses 7439-96-5, Manganese, uses 7440-02-0, Nickel, uses 7440-05-3, Palladium, uses 7440-06-4,

Platinum, uses 7440-47-3, Chromium, uses 7440-48-4, Cobalt, uses
7440-50-8, Copper, uses 7440-57-5, Gold, uses
RL: CAT (Catalyst use); TEM (Technical or engineered material use); USES
(Uses)
(substrate-**supported** aligned **carbon** nanotube films)
IT 71-43-2, Benzene, reactions 74-82-8, Methane, reactions 74-86-2,
Acetylene, reactions
RL: PEP (Physical, engineering or chemical process); RCT (Reactant); PROC
(Process); RACT (Reactant or reagent)
(substrate-**supported** aligned **carbon** nanotube films)
IT 1302-81-4, Aluminum sulfide 1303-00-0, Gallium arsenide, uses
1309-48-4, Magnesia, uses 1344-09-8, Waterglass 1344-28-1, Alumina,
uses 7631-86-9, Silica, uses 7782-42-5, Graphite, uses
13463-67-7, Titania, uses 14808-60-7, Quartz, uses
22831-42-1, Aluminum arsenide 50926-11-9, Indium tin oxide 53238-24-7,
Gallium sulfide
RL: TEM (Technical or engineered material use); USES (Uses)
(substrate-**supported** aligned **carbon** nanotube films)
IT 9004-34-6, Cellulose, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(tape; substrate-**supported** aligned **carbon** nanotube
films)
RE.CNT 2 THERE ARE 2 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE
(1) Japan Fine Ceramics Center; EP 0947466 A 1999 HCAPLUS
(2) The Research Foundation Of State University Of New York; WO 9965821 A 1999
HCAPLUS
IT **3317-67-7,** Cobalt(II) phthalocyanine
RL: **CAT (Catalyst use);** USES (Uses)
(substrate-**supported** aligned **carbon** nanotube films)
RN 3317-67-7 HCAPLUS
CN Cobalt, [29H,31H-phthalocyaninato(2-)-κN29,κN30,κN31,.ka
ppa.N32]-, (SP-4-1)- (9CI) (CA INDEX NAME)



IT **132-16-1,** Iron(II) phthalocyanine
RL: **CAT (Catalyst use);** PEP (Physical, engineering or chemical
process); RCT (Reactant); PROC (Process); RACT (Reactant or reagent); USES
(Uses)
(substrate-**supported** aligned **carbon** nanotube films)
RN 132-16-1 HCAPLUS
CN Iron, [29H,31H-phthalocyaninato(2-)-κN29,κN30,κN31,.kapp
a.N32]-, (SP-4-1)- (9CI) (CA INDEX NAME)



IT 13463-67-7, Titania, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(substrate-**supported** aligned **carbon** nanotube films)
RN 13463-67-7 HCAPLUS
CN Titanium oxide (TiO_2) (8CI, 9CI) (CA INDEX NAME)

O=Ti=O

L111 ANSWER 14 OF 36 HCAPLUS COPYRIGHT 2005 ACS on STN
AN 2000:861597 HCAPLUS
DN 134:30908
ED Entered STN: 08 Dec 2000
TI Preparation of patterned carbon nanotube films
IN Mau, Albert; Dai, Li-Ming; Huang, Shaoming; Yang, Yong Yuan; He, Hui Zhu
PA Commonwealth Scientific and Industrial Research Organisation, Australia
SO PCT Int. Appl., 26 pp.
CODEN: PIXXD2
DT Patent
LA English
IC ICM C01B031-02
ICS D01F009-12; D01F009-127
CC 49-1 (Industrial Inorganic Chemicals)
Section cross-reference(s): 57, 67, 74
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2000073203	A1	20001207	WO 2000-AU549	20000525
	EP 1200341	A1	20020502	EP 2000-926580	20000525

WO 2000073203 designated states:
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG

EP 1200341 designated states:
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,

IE, SI, LT, LV, FI, RO, MK, CY, AL

	AU 753177	B2	20021010	AU 2000-45283	20000525
	JP 2003500324	T2	20030107	JP 2000-621279	20000525
	US 6811957	B1	20041102	US 2002-979793	20020315
PRAI	AU 1999-649	A	19990528		
	WO 2000-AU549	W	20000525		

CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
WO 2000073203	ICM	C01B031-02
	ICS	D01F009-12; D01F009-127
US 6811957	ECLA	C01B031/02B; D01F009/127

AB A patterned layer of aligned carbon nanotubes is prepared on a substrate by applying a photoresist layer to a portion of a substrate surface capable of supporting nanotube growth, masking a region of the photoresist layer to provide a masked portion and an unmasked portion, and subjecting the unmasked portion to electromagnetic radiation of a wavelength and intensity sufficient to transform the unmasked portion while leaving the masked portion substantially untransformed, where the transformed portion exhibits solubility characteristics different from the untransformed portion. The photoresist layer is developed by contacting with a solvent for a time and conditions sufficient to dissolve one of the transformed and untransformed portions of the photoresist, leaving the other portion attached to the substrate. A layer of aligned carbon nanotubes is synthesized on regions of the substrate to which the remaining photoresist portion is not attached, to provide a patterned layer of aligned carbon nanotubes on the substrate.

ST carbon nanotube aligned patterned film prepn; photoresist carbon nanotube patterned film prepn

IT Nanotubes
RL: IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); PREP (Preparation); PROC (Process)
(carbon fibers, fibrils; preparation of patterned carbon nanotube films)

IT Nanotubes
RL: IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); PREP (Preparation); PROC (Process)
(carbon; preparation of patterned carbon nanotube films)

IT Vapor deposition process
(chemical; preparation of patterned carbon nanotube films)

IT Carbon fibers, preparation
RL: IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); PREP (Preparation); PROC (Process)
(nanotube, fibrils; preparation of patterned carbon nanotube films)

IT Phenolic resins, processes
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(novolak, cresol-based; preparation of patterned carbon nanotube films)

IT Alkadienes
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(polymers; preparation of patterned carbon nanotube films)

IT Ceramics
Photoresists
Thermal decomposition **catalysts**
(**preparation** of patterned carbon nanotube films)

IT Metallocenes
RL: CAT (Catalyst use); PEP (Physical, engineering or chemical process); RCT (Reactant); PROC (Process); RACT (Reactant or reagent); USES (Uses)
(preparation of patterned carbon nanotube films)

IT Bases, processes
Epoxy resins, processes
Hydroxides (inorganic)
Polyanilines
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(preparation of patterned carbon nanotube films)

IT Alkanes, reactions
RL: PEP (Physical, engineering or chemical process); RCT (Reactant); PROC (Process); RACT (Reactant or reagent)
(preparation of patterned carbon nanotube films)

IT Alkenes, reactions
RL: PEP (Physical, engineering or chemical process); RCT (Reactant); PROC (Process); RACT (Reactant or reagent)
(preparation of patterned carbon nanotube films)

IT Alkynes
RL: PEP (Physical, engineering or chemical process); RCT (Reactant); PROC (Process); RACT (Reactant or reagent)
(preparation of patterned carbon nanotube films)

IT Aromatic hydrocarbons, reactions
RL: PEP (Physical, engineering or chemical process); RCT (Reactant); PROC (Process); RACT (Reactant or reagent)
(preparation of patterned carbon nanotube films)

IT Glass, processes
RL: PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(preparation of patterned carbon nanotube films)

IT Mica-group minerals, processes
RL: PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(preparation of patterned carbon nanotube films)

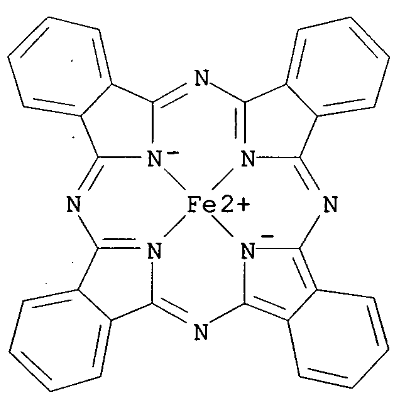
IT Polymers, processes
RL: PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(preparation of patterned carbon nanotube films)

IT Organometallic compounds
RL: CAT (Catalyst use); PEP (Physical, engineering or chemical process); RCT (Reactant); PROC (Process); RACT (Reactant or reagent); USES (Uses)
(transition metal; preparation of patterned carbon nanotube films)

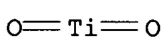
IT 102-54-5, Ferrocene **132-16-1**, Iron(II) phthalocyanine 7429-90-5, Aluminum, processes 7439-89-6, Iron, processes 7439-96-5, Manganese, processes 7440-02-0, Nickel, processes 7440-05-3, Palladium, processes 7440-06-4, Platinum, processes 7440-47-3, Chromium, processes 7440-48-4, Cobalt, processes 7440-50-8, Copper, processes 7440-57-5, Gold, processes 14055-02-8, Nickel(II) phthalocyanine
RL: **CAT (Catalyst use)**; PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(preparation of patterned carbon nanotube films)

IT 60-29-7, Diethyl ether, processes 67-64-1, Acetone, processes 75-59-2, Tetramethylammonium hydroxide 78-93-3, Methyl ethyl ketone, processes 107-21-1, Ethylene glycol, processes 111-15-9 115-10-6, Dimethyl ether 540-67-0, Methyl ethyl ether 1336-21-6, Ammonium hydroxide 9003-53-6D, Polystyrene, derivs. 9011-14-7, PMMA 25233-30-1D, Polyaniline, derivs. 25265-75-2, Butanediol 53208-22-3D, Diazonaphthoquinone, derivs.
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(preparation of patterned carbon nanotube films)

IT 71-43-2, Benzene, reactions 74-82-8, Methane, reactions 74-86-2, Acetylene, reactions
RL: PEP (Physical, engineering or chemical process); RCT (Reactant); PROC (Process); RACT (Reactant or reagent)
(preparation of patterned carbon nanotube films)
IT 1302-81-4, Aluminum sulfide 1303-00-0, Gallium arsenide, processes 1309-48-4, Magnesia, processes 1344-09-8, Waterglass 1344-28-1, Alumina, processes 7631-86-9, Silica, processes 7782-42-5, Graphite, processes **13463-67-7, Titania,** processes 14808-60-7, Quartz, processes 22831-42-1, Aluminum arsenide 50926-11-9, Indium tin oxide 53238-24-7, Gallium sulfide
RL: PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(preparation of patterned carbon nanotube films)
RE.CNT 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE
(1) Chuang; US 6062931 A 2000 HCAPLUS
(2) Debe; US 5726524 A 1998 HCAPLUS
(3) Japan Fine Ceramics Center; WO 9842620 A 1998 HCAPLUS
(4) Xu; US 5872422 A 1999 HCAPLUS
(5) Xu; US 5973444 A 1999 HCAPLUS
IT **132-16-1,** Iron(II) phthalocyanine
RL: **CAT (Catalyst use)**; PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(preparation of patterned carbon nanotube films)
RN 132-16-1 HCAPLUS
CN Iron, [29H,31H-phthalocyaninato(2-)-κN29,κN30,κN31,.kappa.N32]-, (SP-4-1)- (9CI) (CA INDEX NAME)



IT **13463-67-7, Titania,** processes
RL: PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(preparation of patterned carbon nanotube films)
RN 13463-67-7 HCAPLUS
CN Titanium oxide (TiO_2) (8CI, 9CI) (CA INDEX NAME)



L111 ANSWER 15 OF 36 HCAPLUS COPYRIGHT 2005 ACS on STN
AN 2000:756632 HCAPLUS
DN 133:311475
ED Entered STN: 27 Oct 2000
TI Multilayer carbon nanotube films
IN Dai, Liming; Huang, Shaoming
PA Commonwealth Scientific and Industrial Research Organisation, Australia
SO PCT Int. Appl., 22 pp.
CODEN: PIXXD2
DT Patent
LA English
IC ICM C01B031-02
ICS D01F009-12; D01F009-127
CC 49-1 (Industrial Inorganic Chemicals)
Section cross-reference(s): 57, 67, 78
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2000063115	A1	20001026	WO 2000-AU324	20000414
	W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
	RW: GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
	CA 2370022	AA	20001026	CA 2000-2370022	20000414
	EP 1183210	A1	20020306	EP 2000-915051	20000414
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI				
	JP 2002542136	T2	20021210	JP 2000-612216	20000414
	AU 764152	B2	20030814	AU 2000-36496	20000414
	TW 483870	B	20020421	TW 2000-89107194	20000415
	ZA 2001008303	A	20030109	ZA 2001-8303	20011009
	US 6808746	B1	20041026	US 2002-958906	20020111
PRAI	AU 1999-9764	A	19990416		
	WO 2000-AU324	W	20000414		

CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
WO 2000063115	ICM	C01B031-02
	ICS	D01F009-12; D01F009-127
US 6808746	ECLA	C01B031/02B; D01F009/127

AB A process is described for preparation of a substrate-free aligned nanotube film, comprising: (a) synthesizing a layer of aligned carbon nanotubes on a quartz glass substrate by pyrolysis of a carbon-containing material at 800-1100°C in the presence of a suitable catalyst for nanotube formation; and (b) etching the quartz glass substrate at the nanotube/substrate interface to release the layer of aligned nanotubes from the substrate. The process can be used for depositing a substrate-free carbon nanotube film onto another nanotube film. Addnl., the process can be used for the preparation of a "hetero-structured" multilayer carbon nanotube film which includes one or more carbon nanotube layers together with layers of other materials, such as metals, semiconductors and polymers.
ST carbon nanotube film prepn multilayer
IT Nanotubes

RL: PEP (Physical, engineering or chemical process); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); PROC (Process); USES (Uses)
(carbon; preparation of multilayer carbon nanotube films)

IT Glass substrates
Semiconductor materials
Thermal decomposition
Thermal decomposition **catalysts**
(**preparation** of multilayer carbon nanotube films)

IT Transition metal alloys
Transition metals, uses
RL: CAT (Catalyst use); USES (Uses)
(preparation of multilayer carbon nanotube films)

IT Alkanes, processes
Alkenes, processes
Alkynes
Aromatic hydrocarbons, processes
Metals, processes
Oxides (inorganic), processes
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(preparation of multilayer carbon nanotube films)

IT Ceramics
(substrates; preparation of multilayer carbon nanotube films)

IT Mica-group minerals, processes
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(substrates; preparation of multilayer carbon nanotube films)

IT 7631-86-9, Silica, processes
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(mesoporous, substrate; preparation of multilayer carbon nanotube films)

IT 1344-28-1, Alumina, processes
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(nanoporous, substrate; preparation of multilayer carbon nanotube films)

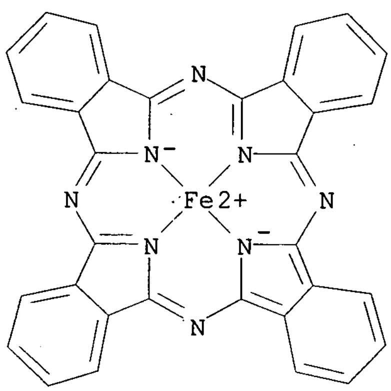
IT 7429-90-5, Aluminum, uses 7439-89-6, Iron, uses 7439-96-5, Manganese, uses 7440-02-0, Nickel, uses 7440-05-3, Palladium, uses 7440-47-3, Chromium, uses 7440-48-4, Cobalt, uses
RL: CAT (Catalyst use); USES (Uses)
(preparation of multilayer carbon nanotube films)

IT 102-54-5, Ferrocene **132-16-1**, Iron (II) phthalocyanine
1293-78-3, Nickel bis(cyclopentadiene) 14055-02-8, Nickel (II) phthalocyanine
RL: **CAT (Catalyst use)**; NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(preparation of multilayer carbon nanotube films)

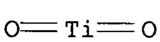
IT 1302-81-4, Aluminum sulfide 1303-00-0, Gallium arsenide, processes
1309-48-4, Magnesia, processes 1333-74-0, Hydrogen, processes
7440-06-4, Platinum, processes 7440-37-1, Argon, processes 7440-50-8, Copper, processes 7440-57-5, Gold, processes 7664-39-3, Hydrofluoric acid, processes **13463-67-7**, **Titania**, processes
22831-42-1, Aluminum arsenide 50926-11-9, Indium tin oxide 53238-24-7, Gallium sulfide
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(preparation of multilayer carbon nanotube films)

IT 7782-42-5, Graphite, processes 60676-86-0, Silica, vitreous
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical

process); PROC (Process); USES (Uses)
(substrate; preparation of multilayer carbon nanotube films)
RE.CNT 3 THERE ARE 3 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE
(1) Japan Fine Ceramics Center; EP 0947466 A 1999 HCAPLUS
(2) Li, D; Chemical Physics Letters, Structure and Growth of Aligned Carbon Nanotube Films by Pyrolysis 2000, V316, P349 HCAPLUS
(3) The Research Foundation Of State University Of New York; WO 9965821 A 1999 HCAPLUS
IT **132-16-1,** Iron (II) phthalocyanine
RL: **CAT (Catalyst use)**; NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(preparation of multilayer carbon nanotube films)
RN 132-16-1 HCAPLUS
CN Iron, [29H,31H-phthalocyaninato(2-)-κN29,κN30,κN31,.kapp a.N32]-, (SP-4-1)- (9CI) (CA INDEX NAME)



IT **13463-67-7, Titania,** processes
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(preparation of multilayer carbon nanotube films)
RN 13463-67-7 HCAPLUS
CN Titanium oxide (TiO2) (8CI, 9CI) (CA INDEX NAME)



L111 ANSWER 16 OF 36 HCAPLUS COPYRIGHT 2005 ACS on STN
AN 2000:496210 HCAPLUS
DN 133:357133
ED Entered STN: 23 Jul 2000
TI Phororedox and photocatalytic processes on **Fe**(III)-**porphyrin** surface modified nanocrystalline **TiO2**
AU Molinari, A.; Amadelli, R.; Antolini, L.; Maldotti, A.; Battioni, P.; Mansuy, D.
CS Dipartimento di Chimica, Centro di Studio su Fotoreattivita e Catalisi (CNR), Universita di Ferrara, Ferrara, Italy
SO Journal of Molecular Catalysis A: Chemical (2000), 158(2), 521-531
CODEN: JMCCF2; ISSN: 1381-1169
PB Elsevier Science B.V.

DT Journal
LA English
CC 74-1 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
Section cross-reference(s): 24, 67
AB Surface derivatization of **titanium dioxide** nanoparticles with a **Fe**(III)-**porphyrin** has been carried out following a new procedure whereby the complex, rather than the surface, contains the aminopropylsilane functional group. This avoids the problems of surface deactivation by silane groups, reported in earlier investigations, on analogous systems. Characterization of the light-transparent dispersions by laser flash photolysis, UV-vis spectroscopy and photo-electrochem. methods has shown that the nature of the solvent is an important parameter in determining the redox processes involving the grafted porphyrin. In particular, one observes marked effects on the stability of the **Fe**(II)-**porphyrin** formed upon capture of the photogenerated electrons. The photocatalytic activity of the **composite** systems was assessed in the process of monooxygenation of cyclohexane and cyclohexene by mol. oxygen. The bonded porphyrin enhances the yield and the formation of the monooxygenation products with respect to total degradation to CO2 for both the examined substrates. On this basis, we can claim an increase in the efficiency and selectivity with the **composite** photocatalytic system. In the case of cyclohexane, we observed, in addition, that the **iron-porphyrin** complex also changes the selectivity of the process, increasing the alc. to ketone ratio.
ST **iron porphyrin** deriv **titania** nanocomposite photocatalyst prepn
IT Chemisorption
Nanocomposites
Nanoparticles
Oxidation, photochemical
Photolysis
(phororedox and photocatalytic processes on **Fe**(III)-**porphyrin** surface modified nanocryst. **TiO2**)
IT **Catalysts**
(photochem.; phororedox and photocatalytic processes on **Fe**(III)-**porphyrin** surface modified nanocryst. **TiO2**)
IT 110-82-7, Cyclohexane, reactions 110-83-8, Cyclohexene, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(oxidation; phororedox and photocatalytic processes on **Fe**(III)-**porphyrin** surface modified nanocryst. **TiO2**)
IT **13463-67-7, Titania,** processes
RL: **CAT (Catalyst use)**; PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(phororedox and photocatalytic processes on **Fe**(III)-**porphyrin** surface modified nanocryst. **TiO2**)
IT 304902-13-4P
RL: **CAT (Catalyst use)**; PEP (Physical, engineering or chemical process); RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); PROC (Process); RACT (Reactant or reagent); USES (Uses)
(phororedox and photocatalytic processes on **Fe**(III)-**porphyrin** surface modified nanocryst. **TiO2**)
IT 7782-44-7, Oxygen, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(phororedox and photocatalytic processes on **Fe**(III)-**porphyrin** surface modified nanocryst. **TiO2**)
IT 120644-24-8P 177157-25-4P 229021-43-6P 300363-08-0P 304902-14-5P
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT

(Reactant or reagent)
(phororedox and photocatalytic processes on **Fe**(III)-
porphyrin surface modified nanocryst. **TiO2**)
RE.CNT 36 THERE ARE 36 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE
(1) Allongue, P; Modern Aspects of Electrochemistry 1992, V23 HCAPLUS
(2) Amadelli, R; J Am Chem Soc 1990, V112, P7099 HCAPLUS
(3) Amadelli, R; J Chem Soc Chem Comm 1992, P1355 HCAPLUS
(4) Anon; Molecular Design of Electrode Surfaces 1992
(5) Anon; Progress in Inorganic Chemistry Series 1997, V44
(6) Battioni, P; Chem Commun 1996, P2037 HCAPLUS
(7) Battioni, P; J Chem Soc Chem Comm 1992, P1051 HCAPLUS
(8) Becker, W; J Phys Chem 1989, V93, P4882 HCAPLUS
(9) Boarini, P; Langmuir 1998, V14, P2080 HCAPLUS
(10) Flinkea, H; J Phys Chem 1979, V83, P353
(11) Flinkea, H; J Phys Chem 1982, V86, P362
(12) Fujihira, M; J Electroanal Chem 1981, V119, P379 HCAPLUS
(13) Grinstaff, M; Science 1994, V264, P1311 HCAPLUS
(14) Groves, J; Cytochrome P450, Structure, Mechanism and Biochemistry 2nd edn 1995
(15) Haller, I; J Am Chem Soc 1978, V100, P8050 HCAPLUS
(16) Hayes, T; J Phys Chem 1984, V88, P1963 HCAPLUS
(17) Hong, A; Environ Sci Technol 1989, V23, P533 HCAPLUS
(18) Hong, A; J Phys Chem 1987, V91, P2109 HCAPLUS
(19) Hong, A; J Phys Chem 1987, V91, P6245 HCAPLUS
(20) Kabir-Ud-Din, C; J Phys Chem 1981, V85, P1679
(21) Kamat, P; J Phys Chem 1983, V87, P59 HCAPLUS
(22) Lindsey, J; Tetrahedron Lett 1986, V27, P4969 HCAPLUS
(23) Maldotti, A; Inorg Chem 1996, V35, P1126 HCAPLUS
(24) Maldotti, A; J Chem Soc Chem Comm 1991, P1487 HCAPLUS
(25) Maldotti, A; J Mol Catal A: Chemical 1996, V114, P141 HCAPLUS
(26) Maldotti, A; J Mol Catal A: Chemical 1996, V113, P147 HCAPLUS
(27) McEvoy, A; Sol Energy Mater Sol Cells 1994, V32, P221 HCAPLUS
(28) Molinari, A; Inorg Chim Acta 1998, V272, P197 HCAPLUS
(29) Moses, P; J Am Chem Soc 1976, V98, P7435 HCAPLUS
(30) O'Regan, B; J Phys Chem 1990, V94, P8720 HCAPLUS
(31) O'Regan, B; Nature 1991, V353, P737 HCAPLUS
(32) Polo, E; Heterogeneous Catalysis and Fine Chemicals 3 1993, P409 HCAPLUS
(33) Sono, M; Chem Rev 1996, V96, P2841 HCAPLUS
(34) Tomkiewicz, M; J Electrochem Soc 1980, V127, P1518 HCAPLUS
(35) Untereker, D; J Electroanal Chem 1977, V81, P309 HCAPLUS
(36) Vithanage, R; J Electrochem Soc 1984, P799 HCAPLUS
IT **13463-67-7, Titania,** processes
RL: **CAT (Catalyst use)**; PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(phororedox and photocatalytic processes on **Fe**(III)-
porphyrin surface modified nanocryst. **TiO2**)
RN 13463-67-7 HCAPLUS
CN Titanium oxide (TiO2) (8CI, 9CI) (CA INDEX NAME)

O=Ti=O

L111 ANSWER 17 OF 36 HCAPLUS COPYRIGHT 2005 ACS on STN
AN 2000:296535 HCAPLUS
DN 132:313199
ED Entered STN: 09 May 2000

TI Photocatalytic degradation of atrazine by porphyrin and phthalocyanine complexes
AU Hequet, V.; Le Cloirec, P.; Gonzalez, C.; Meunier, B.
CS Ecole des Mines de Nantes, Departement Systemes Energetiques et Environnement, Nantes, 44307, Fr.
SO Chemosphere (2000), 41(3), 379-386
CODEN: CMSHAF; ISSN: 0045-6535
PB Elsevier Science Ltd.
DT Journal
LA English
CC 61-5 (Water)
Section cross-reference(s): 5, 67
AB This study focused on a new type of photochem. reaction catalyst: porphyrin and phthalocyanine complexes. In a first step, **catalyst preparation** was optimized. A resin was chosen to support the complexes. Catalytic activity efficiency was determine for the degradation of a

pesticide, atrazine. The best atrazine degradation occurred with 4.6% of complex vs. substrate. The role of the surface was also shown to be important. Performance was demonstrated in terms of kinetics and degradation routes, compared to a classical catalyst, **TiO2**. This study assessed the efficiency of these systems in a mercury lamp reactor and under solar irradiation to reduce energy costs. Best atrazine degradation half-life observed for the complex was .apprx.200 min with iron phthalocyanine. These catalysts exhibited particular oxidation activity; degradation routes were different between the semi-conductor and the metallic complexes. These complexes can cleave the triazinic ring more efficiently than **TiO2**.
ST photocatalytic degrdn atrazine porphyrin phthalocyanine complex; iron porphyrin complex photocatalyst; sulfophthalocyanine iron complex photocatalyst; water purifn photolysis solar radiation; reaction product photocatalytic degrdn atrazine
IT Water purification
  (oxidation; photocatalytic degradation of atrazine in water using porphyrin and phthalocyanine complexes vs. **titania**)
IT Photolysis kinetics
  (photocatalytic degradation of atrazine in water using porphyrin and phthalocyanine complexes vs. **titania**)
IT Catalysts
  (photochem.; photocatalytic degradation of atrazine in water using porphyrin and phthalocyanine complexes vs. **titania**)
IT Water purification
  (photolytic, porphyrin and phthalocyanine complex catalyzed; photocatalytic degradation of atrazine in water using porphyrin and phthalocyanine complexes vs. **titania**)
IT 37264-66-7, Amberlite IRA-910
RL: CAT (Catalyst use); USES (Uses)
  (metallic complex photocatalyst support; photocatalytic degradation of atrazine in water using porphyrin and phthalocyanine complexes vs. **titania**)
IT **13463-67-7, Titania**, uses
RL: CAT (Catalyst use); USES (Uses)
  (photocatalytic degradation of atrazine in water using porphyrin and phthalocyanine complexes vs. **titania**)
IT **11060-84-7P 15213-42-0P**, Iron porphyrin
16009-13-5P, Hemin
RL: **CAT (Catalyst use)**; PEP (Physical, engineering or chemical process); PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); PROC (Process); USES (Uses)

(photocatalytic degradation of atrazine in water using porphyrin and phthalocyanine complexes vs. **titania**)

IT 108-80-5, Cyanuric acid 645-92-1, Ammeline 645-93-2, Ammelide 1007-28-9, Deisopropylatrazine 2163-68-0, Hydroxyatrazine 3397-62-4, Deethyldeisopropyl atrazine 6190-65-4, Deethylatrazine 7313-54-4, Deisopropylhydroxyatrazine 19988-24-0, Deethylhydroxyatrazine 83364-15-2 142179-80-4 169523-78-8 265111-71-5 265111-72-6
RL: FMU (Formation, unclassified); PEP (Physical, engineering or chemical process); FORM (Formation, nonpreparative); PROC (Process)
(photocatalytic degradation of atrazine in water using porphyrin and phthalocyanine complexes vs. **titania**)

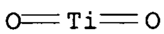
IT 1912-24-9, Atrazine
RL: PEP (Physical, engineering or chemical process); POL (Pollutant); REM (Removal or disposal); OCCU (Occurrence); PROC (Process)
(photocatalytic degradation of atrazine in water using porphyrin and phthalocyanine complexes vs. **titania**)

RE.CNT 38 THERE ARE 38 CITED REFERENCES AVAILABLE FOR THIS RECORD

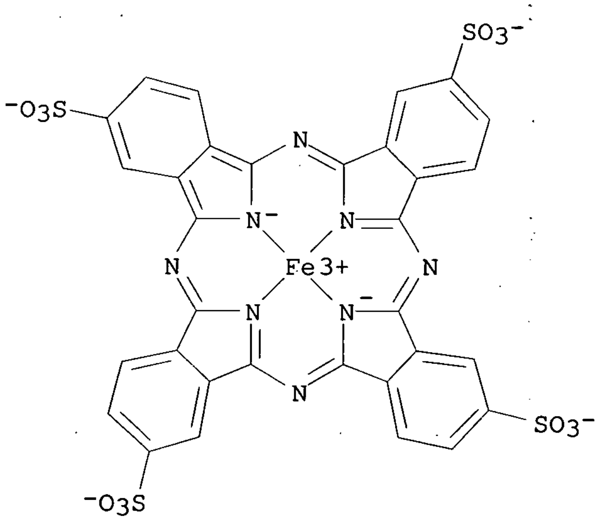
RE
(1) Allemane, H; Ozone Sci Eng 1993, V15, P419 HCAPLUS
(2) Baron, J; Tech Sci Meth 1994, V5, P263
(3) Battaglia, G; Water Supply 1989, V7, P161 HCAPLUS
(4) Bellobono, I; J Membr Sci 1995, V102, P139 HCAPLUS
(5) Benitez, F; Ozone Sci Eng 1995, V17, P237 HCAPLUS
(6) Boisdon, V; Tech Sci Meth 1995, V3, P228
(7) Bottoni, P; Sci Total Environ 1992, V123-124, P581 HCAPLUS
(8) Bourgine, F; J CIWEM 1995, V9(4), P417 HCAPLUS
(9) Carrier, M; Bull Soc Chim Fr 1993, V130(3), P405 HCAPLUS
(10) Chramosta, N; These de l'Universite de Poitiers 1993, V25, P153
(11) Cook, A; ACS Symp Ser 1987, V334, P171 HCAPLUS
(12) Corbin, D; J Mol Catal 1994, V86, P343 HCAPLUS
(13) De Laat, J; Rev Sci Eau 1995, V8, P23 HCAPLUS
(14) Dore, M; Tec & Doc 1989, P505
(15) Erickson, L; Crit Rev Environ Control 1989, V19, P1 HCAPLUS
(16) Hequet, V; These de l'Universite de Provence 1996, P189
(17) Hoigne, J; Am Chem Soc 1989, P363 HCAPLUS
(18) Hustert, K; Toxicol Environ Chem 1991, V31-32, P97 HCAPLUS
(19) Karasevich, E; Kinet Catal 1993, V34(4), P651
(20) Komatsu, T; Bull Chem Soc 1993, V66(6), P164
(21) Labat, G; CR Acad Sci Paris Serie 2
(22) Labat, G; CR Acad Sci Paris Serie 1990, V311(6), P625 HCAPLUS
(23) Lai, M; Wat Environ Res 1995, V67, P347 HCAPLUS
(24) Le Brun, O; These de l'Universite de Poitiers 1992, V10, P191
(25) Legube, B; Ozone Sci Eng 1987, V9, P233 HCAPLUS
(26) Mansuy, D; Coord Chem Rev 1993, V125(1-2), P129 HCAPLUS
(27) Marchini, S; Ecotox Saf 1988, V16, P148 HCAPLUS
(28) Meunier, B; Chem Rev 1992, V92, P1411 HCAPLUS
(29) Montiel, A; Water Supply 1989, P213
(30) Pelizzetti, E; Environ Sci Technol 1990, V24, P1559 HCAPLUS
(31) Pelizzetti, E; Langmuir 1993, V9, P2995 HCAPLUS
(32) Pelizzetti, E; Sci Total Environ 1992, V123-124, P161 HCAPLUS
(33) Richard, Y; L'eau L'Industrie Les Nuisances 1991, V144, P44 HCAPLUS
(34) Schocken, M; Arch Environ Contam Toxicol 1984, V13, P707 HCAPLUS
(35) Sorokin, A; J Chem Soc Chem Commun 1994, P1799 HCAPLUS
(36) Sorokin, A; Science 1995, V268, P1163 HCAPLUS
(37) Tanghe, N; Water Supply 1992, V10, P121 HCAPLUS
(38) Vidal, M; Drug Metab Dispos 1993, V21(5), P811 HCAPLUS

IT **13463-67-7, Titania**, uses
RL: CAT (Catalyst use); USES (Uses)
(photocatalytic degradation of atrazine in water using porphyrin and

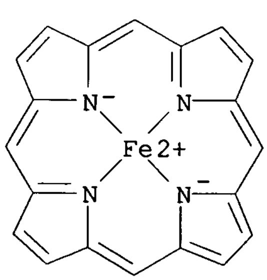
phthalocyanine complexes vs. **titania**)
RN 13463-67-7 HCAPLUS
CN Titanium oxide (TiO2) (8CI, 9CI) (CA INDEX NAME)



IT **11060-84-7P 15213-42-0P**, Iron porphyrin
16009-13-5P, Hemin
RL: **CAT (Catalyst use)**; PEP (Physical, engineering or chemical process); PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); PROC (Process); USES (Uses)
(photocatalytic degradation of atrazine in water using porphyrin and phthalocyanine complexes vs. **titania**)
RN 11060-84-7 HCAPLUS
CN Ferrate(3-), [29H,31H-phthalocyanine-2,9,16,23-tetrasulfonato(6-)-κN29,κN30,κN31,κN32]-, (SP-4-1)- (9CI) (CA INDEX NAME)

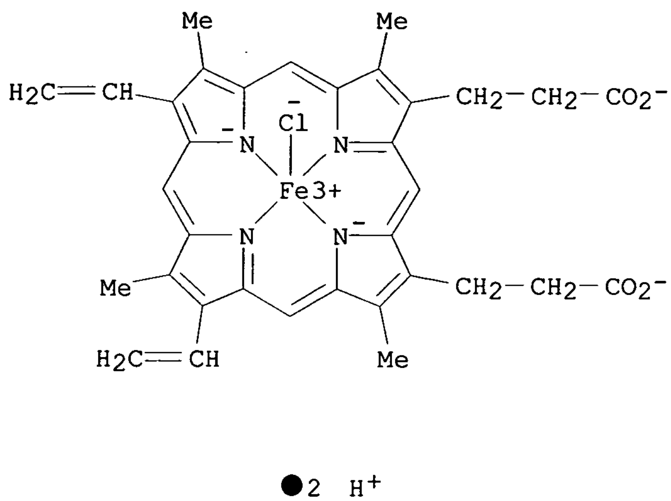


RN 15213-42-0 HCAPLUS
CN Iron, [21H,23H-porphinato(2-)-κN21,κN22,κN23,κN24]-, (SP-4-1)- (9CI) (CA INDEX NAME)



RN 16009-13-5 HCAPLUS

CN Ferrate(2-), chloro[7,12-diethenyl-3,8,13,17-tetramethyl-21H,23H-porphine-2,18-dipropanoato(4-)-κN21,κN22,κN23,κN24]-, dihydrogen, (SP-5-13)- (9CI) (CA INDEX NAME)



L111 ANSWER 18 OF 36 HCAPLUS COPYRIGHT 2005 ACS on STN
AN 2000:661084 HCAPLUS
DN 133:367209
ED Entered STN: 21 Sep 2000
TI Electrochemical Properties of a **Porphyrin-Cobalt**(II) Adsorbed on Silica-**Titania**-Phosphate **Composite** Surface Prepared by the Sol-Gel Method
AU Castellani, Ana M.; Gushikem, Yoshitaka
CS Instituto de Quimica, CP 6154, Unicamp, Campinas, SP, 13083-970, Brazil
SO Journal of Colloid and Interface Science (2000), 230(1), 195-199
CODEN: JCISA5; ISSN: 0021-9797
PB Academic Press
DT Journal
LA English
CC 72-2 (Electrochemistry)
Section cross-reference(s): 29, 57, 66, 73
AB SiO2/**TiO2**/phosphate was obtained by the sol-gel processing method, having the following characteristics: sp. surface area SBET=800 m2 g-1, Ti=14.8 wt% and P=1.5 wt%, and ion exchange capacity of 0.58 mmol g-1. The tetrakis(1-methyl-4-pyridyl) porphyrin ion, H2TmPyP4+, was immobilized on the matrix surface by an ion exchange reaction and then metalated in situ with Co(II), resulting in SiO2/**TiO2**/phosphate/CoTmPyP material. The amount of CoTmPyP incorporated to the matrix was 35.0 μmol g-1. Cyclic voltammetry studies and rotating disk electrode expts. using a **carbon** paste electrode made with the material were carried out. The immobilized complex catalyzed O2 reduction to H2O at -0.22 V in 1 mol L-1 KCl solution at pH 6.8. The cathodic current intensities plotted against O2 concns., between 1 and 11 ppm, showed a linear correlation. (c) 2000 Academic Press.
ST **porphyrin cobalt** adsorbate silica **titania** phosphate **composite** oxygen electroredn; modified electrode **porphyrin cobalt electrocatalyst** oxygen electroredn

IT Catalysis
(**electrocatalysis**; oxygen catalytic electroredn. on silica-**titania**-phosphate **composite** electrode modified with **porphyrin-cobalt** (II) for)
IT Adsorbed substances
Composites
Sol-gel processing
(electrochem. properties of **porphyrin-cobalt** (II) adsorbed on silica-**titania**-phosphate **composite** surface prepared by)
IT Electric current
(of oxygen electroredn. on silica-**titania**-phosphate **composite** electrode modified with **porphyrin-cobalt**(II) in dependence of oxygen concentrate)
IT Reduction, electrochemical
(of oxygen on silica-**titania**-phosphate **composite** electrode modified with **porphyrin-cobalt**(II) in KCl solution containing dissolved oxygen)
IT UV and visible spectra
(of silica-**titania**-phosphate **composite** bare and modified with **porphyrin-cobalt**(II))
IT Cyclic voltammetry
(of silica-**titania**-phosphate **composite** electrode modified with **porphyrin-cobalt**(II) in KCl solution containing oxygen)
IT Surface area
(of silica-**titania**-phosphate **composite** prepared by sol-gel method)
IT Chemically modified electrodes
(silica-**titania**-phosphate **composite** electrode modified with **porphyrin-cobalt** (II) for oxygen catalytic electroredn.)
IT 7782-44-7, Oxygen, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(cyclic voltammetry of silica-**titania**-phosphate **composite** electrode modified with **porphyrin-cobalt**(II) in KCl solution containing dissolved oxygen)
IT **175854-74-7**
RL: **CAT (Catalyst use)**; PRP (Properties); USES (Uses)
(electrochem. properties of **porphyrin-cobalt** (II) adsorbed on silica-**titania**-phosphate **composite** surface prepared by)
IT 7631-86-9, Silica, processes **13463-67-7, Titania,** processes 14265-44-2, Phosphate, processes
RL: FMU (Formation, unclassified); MSC (Miscellaneous); PEP (Physical, engineering or chemical process); FORM (Formation, nonpreparative); PROC (Process)
(electrochem. properties of **porphyrin-cobalt** (II) adsorbed on silica-**titania**-phosphate **composite** surface prepared by)
IT 78-10-4, Tetraethoxysilane 5593-70-4, Titanium tetrabutoxide
RL: PEP (Physical, engineering or chemical process); RCT (Reactant); PROC (Process); RACT (Reactant or reagent)
(preparation of silica-**titania** binary oxide by sol-gel processing from solution containing)
IT 7664-38-2, Phosphoric acid, uses
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(preparation of silica-**titania**-phosphate **composite** by

adsorption of phosphate on silica-**titania** binary oxide from solution containing)

RE.CNT 47 THERE ARE 47 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE
(1) Alfaya, A; Chem Mater 1998, V10(3), P909 HCAPLUS
(2) Andreotti, E; J Braz Chem Soc 1992, V3, P21 HCAPLUS
(3) Anson, F; Acc Chem Res 1997, V30(11), P437 HCAPLUS
(4) Bard, A; Electrochemical Methods 1980
(5) Benvenutti, E; J Chem Soc Faraday Trans 1992, V88, P3193 HCAPLUS
(6) Brett, C; Electrochemistry:Principles, Methods and Applications 1994, P87
(7) Chan, R; Inorg Chem 1985, V24, P3777 HCAPLUS
(8) Corwin, A; J Am Chem Soc 1968, V90, P6577 HCAPLUS
(9) Cunha, L; J Braz Chem Soc 1995, V6, P271
(10) Durand, R; J Electroanal Chem 1982, V134, P273 HCAPLUS
(11) D'Souza, F; Electroanalysis 1997, V9(14), P1093 HCAPLUS
(12) D'Souza, F; J Electroanal Chem 1996, V411, P167 HCAPLUS
(13) Goodhew, P; J Electron Microsc Anal 1992
(14) Gushikem, Y; J Colloid Interface Sci 1996, V184, P236 HCAPLUS
(15) Hambright, P; Inorg Chem 1970, V9(7), P1757 HCAPLUS
(16) Itoh, M; J Catal 1974, V35, P225 HCAPLUS
(17) Kubota, L; Electrochim Acta 1992, V37, P2477 HCAPLUS
(18) Kubota, L; J Electroanal Chem 1993, V362, P219 HCAPLUS
(19) Kubota, L; Langmuir 1995, V11, P1009 HCAPLUS
(20) Kubota, L; Langmuir 1995, V11, P1009 HCAPLUS
(21) Lei, Y; Inorg Chem 1995, V34, P1083 HCAPLUS
(22) Lev, O; Chem Mater 1997, V9, P2354 HCAPLUS
(23) Liu, Z; J Catal 1994, V149, P117 HCAPLUS
(24) Nakabayashi, H; Bull Chem Soc Jpn 1965, V65(3), P914
(25) Nakayama, H; J Mater Chem 1997, V7, P1063 HCAPLUS
(26) Ni, C; Inorg Chem 1985, V24, P4754 HCAPLUS
(27) Ni, C; J Phys Chem 1987, V91, P1158 HCAPLUS
(28) Peixoto, C; Anal Proc 1995, V32, P503 HCAPLUS
(29) Pessoa, C; J Electroanal Chem 1999, V477, P158 HCAPLUS
(30) Pottier, R; Can J Spectr 1988, V33, P57 HCAPLUS
(31) Prado, L; J Braz Chem Soc 1993, V4, P88
(32) Ribeiro, E; Electrochim Acta 1999, V44(20), P3589 HCAPLUS
(33) Schafer, W; J Chromatogr 1991, V587, P137 HCAPLUS
(34) Shi, C; Inorg Chem 1990, V29, P4298 HCAPLUS
(35) Shi, C; Inorg Chem 1992, V31, P5078 HCAPLUS
(36) Shi, C; Inorg Chem 1996, V35, P7928 HCAPLUS
(37) Shi, C; Inorg Chem 1997, V36, P4294 HCAPLUS
(38) Shi, C; Inorg Chem 1998, V37, P1037 HCAPLUS
(39) Shi, C; J Am Chem Soc 1991, V113, P9564 HCAPLUS
(40) Song, E; Langmuir 1998, V14, P4315 HCAPLUS
(41) Steiger, B; Inorg Chem 1994, V33, P5767 HCAPLUS
(42) Walcarius, A; Electroanalysis 1998, V10(18), P1217 HCAPLUS
(43) Wu, X; Electroanalysis 1997, V9(16), P1288 HCAPLUS
(44) Yuasa, M; J Electrochem Soc 1995, V142, P2615
(45) Zaldivar, G; Electrochim Acta 1994, V39, P33 HCAPLUS
(46) Zaldivar, G; J Electroanal Chem 1991, V318, P247 HCAPLUS
(47) Zaldivar, G; J Electroanal Chem 1992, V337, P165 HCAPLUS

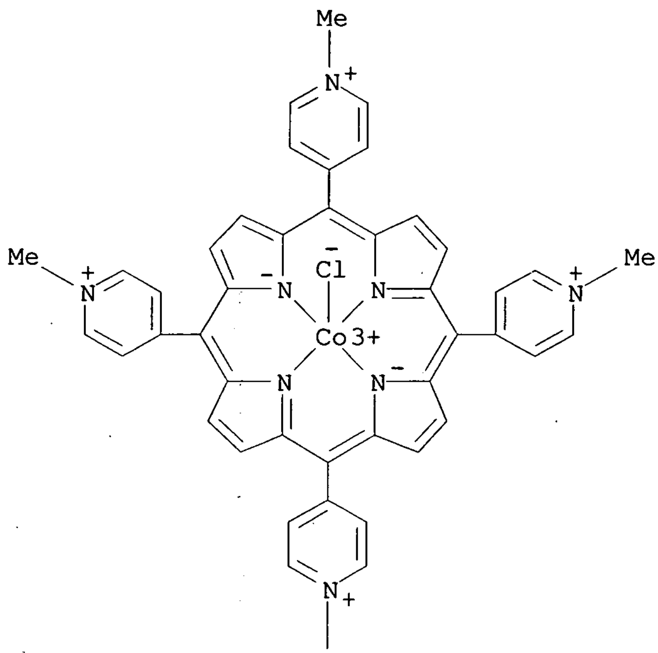
IT **175854-74-7**
RL: **CAT (Catalyst use)**; PRP (Properties); USES (Uses)
(electrochem. properties of **porphyrin-cobalt** (II) adsorbed on silica-**titania**-phosphate **composite** surface prepared by)

RN 175854-74-7 HCAPLUS

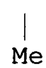
CN Cobalt(4+), chloro[[4,4',4'',4'''-(21H,23H-porphine-5,10,15,20-tetrayl)tetrakis[1-methylpyridiniumato]](2-)-κN21,κN22,κ

N23,κN24]-, (SP-5-12)- (9CI) (CA INDEX NAME)

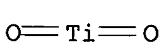
PAGE 1-A



PAGE 2-A



IT **13463-67-7, Titania,** processes
RL: FMU (Formation, unclassified); MSC (Miscellaneous); PEP (Physical, engineering or chemical process); FORM (Formation, nonpreparative); PROC (Process)
(electrochem. properties of **porphyrin-cobalt** (II) adsorbed on silica-**titania**-phosphate **composite** surface prepared by)
RN 13463-67-7 HCAPLUS
CN Titanium oxide (TiO2) (8CI, 9CI) (CA INDEX NAME)



L111 ANSWER 19 OF 36 HCAPLUS COPYRIGHT 2005 ACS on STN
AN 1999:212772 HCAPLUS
DN 130:239776
ED Entered STN: 05 Apr 1999
TI Sulfur-tolerant catalyst
IN Galperin, Leonid B.

PA UOP LLC, USA
SO U.S., 6 pp.
CODEN: USXXAM
DT Patent
LA English
IC ICM B01J031-00
NCL 502163000
CC 51-6 (Fossil Fuels, Derivatives, and Related Products)
Section cross-reference(s): 67
FAN.CNT 2

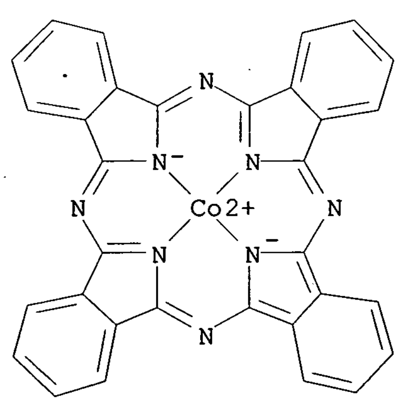
	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 5888922	A	19990330	US 1996-648632	19960513
	US 5954948	A	19990921	US 1998-203869	19981202
PRAI	US 1996-648632	A2	19960513		

CLASS

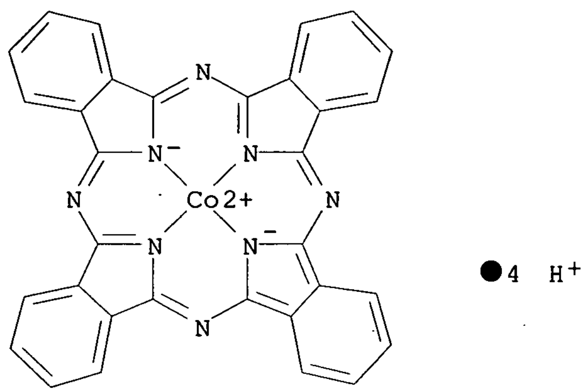
PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
US 5888922	ICM	B01J031-00
	NCL	502163000
US 5888922	ECLA	B01J031/18B
US 5954948	ECLA	B01J031/18B

AB A catalyst system is described which is useful for various hydrocarbon conversion processes and is tolerant to large amts. of S (.apprx.30,000 ppm S) in the feedstream. The catalyst comprises a 1st component which comprises ≥1 Group VIII metal dispersed on an inorg. oxide support and a 2nd component comprising a metal phthalocyanine dispersed on an inorg. oxide support. Preferred Group VIII metals are Pt and Pd, while preferred metal phthalocyanines are Co or Ni phthalocyanine. Preferred inorg. oxide supports are mol. sieves and/or aluminas.
ST sulfur tolerant catalyst hydrocarbon conversion; reforming catalyst sulfur tolerant
IT ZSM zeolites
RL: CAT (Catalyst use); USES (Uses)
(ZSM-8; support in sulfur-tolerant catalyst for hydrocarbon conversion)
IT Petroleum hydrotreating **catalysts**
Petroleum hydrotreating **catalysts**
(hydroisomerization; **preparation** of sulfur-tolerant **catalyst** for hydrocarbon conversion)
IT Molecular sieves
(non-zeolitic; support in sulfur-tolerant catalyst for hydrocarbon conversion)
IT Petroleum reforming **catalysts**
Reforming **catalysts**
(**preparation** of sulfur-tolerant **catalyst** for hydrocarbon conversion)
IT Isomerization
Isomerization
(reductive, **catalysts; preparation** of sulfur-tolerant **catalyst** for hydrocarbon conversion)
IT Isomerization **catalysts**
(reductive; **preparation** of sulfur-tolerant **catalyst** for hydrocarbon conversion)
IT Beta zeolites
Faujasite-type zeolites
L zeolites
Y zeolites
Zeolite ZSM-11
Zeolite ZSM-12

Zeolite ZSM-35
Zeolite ZSM-5
RL: CAT (Catalyst use); USES (Uses)
(support in sulfur-tolerant catalyst for hydrocarbon conversion)
IT **3317-67-7,** Cobalt phthalocyanine 7440-05-3, Palladium, uses
7440-06-4, Platinum, uses 14055-02-8 20909-39-1, Palladium
phthalocyanine **28802-06-4,** Cobalt phthalocyanine tetrasulfonate
RL: **CAT (Catalyst use)**; USES (Uses)
(in sulfur-tolerant catalyst for hydrocarbon conversion)
IT 1305-78-8, Calcia, uses 1309-48-4, Magnesia, uses 1314-23-4, Zirconia,
uses 1344-28-1, Alumina, uses 7631-86-9, Silica, uses
13463-67-7, Titania, uses
RL: CAT (Catalyst use); USES (Uses)
(support in sulfur-tolerant catalyst for hydrocarbon conversion)
RE.CNT 13 THERE ARE 13 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE
(1) Bradley; US 5366617 1994 HCAPLUS
(2) Buss; US 4456527 1984 HCAPLUS
(3) Douglas; US 4049572 1977 HCAPLUS
(4) Frame; US 4290913 1981 HCAPLUS
(5) Gleim; US 3252892 1966 HCAPLUS
(6) Hoekstra; US 2620314 1952 HCAPLUS
(7) Lok; US 4758419 1988 HCAPLUS
(8) O'Hara; US 3274124 1966 HCAPLUS
(9) O'Hara; US 3909450 1975 HCAPLUS
(10) Pecoraro; US 4988659 1991 HCAPLUS
(11) Pellet; US 4861739 1989 HCAPLUS
(12) Steinbach; US 4970188 1990 HCAPLUS
(13) Urban; US 3408287 1968 HCAPLUS
IT **3317-67-7,** Cobalt phthalocyanine **28802-06-4,** Cobalt
phthalocyanine tetrasulfonate
RL: **CAT (Catalyst use)**; USES (Uses)
(in sulfur-tolerant catalyst for hydrocarbon conversion)
RN 3317-67-7 HCAPLUS
CN Cobalt, [29H,31H-phthalocyaninato(2-)-κN29,κN30,κN31,.ka
ppa.N32]-, (SP-4-1)- (9CI) (CA INDEX NAME)



RN 28802-06-4 HCAPLUS
CN Cobaltate(4-), [29H,31H-phthalocyanine-C,C,C,C-tetrasulfonato(6-)-
κN29,κN30,κN31,κN32]-, tetrahydrogen (9CI) (CA
INDEX NAME)



$4\,[\,D1{-}SO_3^-\,]$

IT **13463-67-7, Titania,** uses
RL: CAT (Catalyst use); USES (Uses)
(support in sulfur-tolerant catalyst for hydrocarbon conversion)
RN 13463-67-7 HCAPLUS
CN Titanium oxide (TiO_2) (8CI, 9CI) (CA INDEX NAME)

O=Ti=O

L111 ANSWER 20 OF 36 WPIX COPYRIGHT 2005 THE THOMSON CORP on STN
AN 1999-540689 [45] WPIX
DNN N1999-400749 DNC C1999-157934
TI Ion conductive matrixes for forming membranes, **composite** electrode, electrochemical cell, fuel cell and water electrolizer.
DC A32 A85 E16 E36 E37 J03 L03 P56 X16
IN DUVDEVANI, T; MELMAN, A; PELED, E
PA (UYRA-N) UNIV RAMOT APPLIED RES & IND DEV LTD; (UYTE-N) UNIV TEL AVIV FUTURE TECHNOLOGY DEV LP
CYC 84
PI WO 9944245 A1 19990902 (199945)* EN 35 H01M004-58
RW: AT BE CH CY DE DK EA ES FI FR GB GH GM GR IE IT KE LS LU MC MW NL OA PT SD SE SZ UG ZW
W: AL AM AT AU AZ BA BB BG BR BY CA CH CN CU CZ DE DK EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MD MG MK MN MW MX NO NZ PL PT RO RU SD SE SG SI SK SL TJ TM TR TT UA UG US UZ VN YU ZW
AU 9926369 A 19990915 (200004) H01M004-58
EP 1066656 A1 20010110 (200103) EN H01M004-58
R: DE ES FR GB IT NL SE
IL 123419 A 20001206 (200103) H01M004-58
IL 126830 A 20010520 (200153) H01M004-58
KR 2001034536 A 20010425 (200164) H01M004-58
JP 2002505506 W 20020219 (200216) 41 H01M008-02
US 6811911 B1 20041102 (200472) H01M008-10
ADT WO 9944245 A1 WO 1999-IL109 19990222; AU 9926369 A AU 1999-26369 19990222;

EP 1066656 A1 EP 1999-906424 19990222, WO 1999-IL109 19990222; IL 123419 A IL 1998-123419 19980224; IL 126830 A IL 1998-126830 19981030; KR 2001034536 A KR 2000-709294 20000823; JP 2002505506 W WO 1999-IL109 19990222, JP 2000-533910 19990222; US 6811911 B1 WO 1999-IL109 19990222, US 2000-622676 20001018

FDT AU 9926369 A Based on WO 9944245; EP 1066656 A1 Based on WO 9944245; JP 2002505506 W Based on WO 9944245; US 6811911 B1 Based on WO 9944245

PRAI IL 1998-126830 19981030; IL 1998-123419 19980224

IC ICM H01M004-58; H01M008-02; H01M008-10
ICS A61K009-14; B01D071-02; B23P019-00; C08J005-20; C25B009-00; C25B011-04; C25B013-00; H01B001-06; H01M004-32; H01M004-34; H01M004-42; H01M004-50; H01M004-62; H01M004-86; H01M006-00; H01M006-04; H01M006-14; H01M006-16

ICA H01M006-18

AB WO 9944245 A UPAB: 19991103
NOVELTY - The ion conductive matrix comprises 5 - 60 volume percent (volume%) of inorganic powder in form of sub-micron particles having good aqueous electrolyte absorption capacity, 5 - 50 volume% of polymeric binder compatible with an aqueous electrolyte, and 10 - 90 volume% of an aqueous electrolyte.

DETAILED DESCRIPTION - INDEPENDENT CLAIMS are also included for:

(i) Method for casting membrane which comprises preparing mixture comprising inorganic powder, polymeric binder, at least one high boiling point solvent with boiling point above 100 deg. C and at least one low boiling point solvent in which the polymeric binder is soluble or forms a gel at casting temperature. Film is casted out of mixture and low boiling point solvent is evaporated from mixture to form solid film. Solid film is washed to replace high boiling point solvent with aqueous electrolyte solution. Alternatively, mixture is heated to its softening temperature and film is formed by hot extrusion of softened mixture. The high boiling point solvent used in the mixture has boiling point above 90 deg. C. Film is cooled to obtain solid film, and washed to replace solvent with aqueous electrolyte solution.

(ii) Method for casting **composite** electrode comprising steps involved in casting membrane. Alternatively, preparing **composite** electrode by extrusion which comprises steps involved in preparing membrane by extrusion.

USE - For forming membranes, **composite** electrode, electrochemical cell, fuel cell and water electrolizer.

ADVANTAGE - Novel, low cost and highly conductive ion conducting matrix, membranes and electrodes are provided. The ion conducting membranes have good porosity and mechanical properties. Internal lubricants with low solubility in water is used to achieve solubility factor not higher than 14 (cal/cc)1/2, thereby preventing the migration of internal lubricants out of ion conductive membranes when they come in contact with water at washing phase or acid loading phase.

Dwg.0/2

FS CPI EPI GMPI

FA AB; DCN

MC CPI: A09-A03; A12-E06B; A12-E09; A12-E14; E10-A09B8; E10-A22G; E31-A02; E31-B03C; E31-B03D; E31-D01; E31-F05; E31-H05; E31-K05A; E31-P03; E32-A04; E33; E34; E35; J03-A; L03-A02; L03-E01B9; L03-E04B
EPI: X16-A; X16-A02; X16-E01C; X16-E01C1; X16-E05; X16-E06; X16-E09

L111 ANSWER 21 OF 36 HCAPLUS COPYRIGHT 2005 ACS on STN
AN 1995:758690 HCAPLUS
DN 123:144903
ED Entered STN: 26 Aug 1995
TI Radical polymerization initiators and their uses

IN Iryama, Yutaka; Takaguchi, Kenji; Tominaga, Hiroshi
PA Nippon Paint Co Ltd, Japan
SO Jpn. Kokai Tokkyo Koho, 5 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
IC ICM C08F004-00
ICS C09C003-04; C09C003-08
CC 35-3 (Chemistry of Synthetic High Polymers)
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 07082308	A2	19950328	JP 1993-225575	19930910
PRAI	JP 1993-225575		19930910		

CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
JP 07082308	ICM	C08F004-00
	ICS	C09C003-04; C09C003-08

AB The initiators comprise inorg. or organic powders which have been treated with a plasma, and the initiators may be mixed with radically polymerizable vinyl monomers to give polymeric **composite** materials to be used as processed fillers or pigments.
ST plasma treated powder polymn initiator
IT Filling materials
Pigments
(plasma-treated inorg. or organic powder radical polymerization **catalysts** for manufacture of processed)
IT Plasma
(radical polymerization initiators by treatment of inorg. or organic particles
with)
IT **Carbon** black, uses
Mica-group minerals, uses
RL: **CAT (Catalyst use)**; USES (Uses)
(radical polymerization initiators from plasma-treated)
IT Glass, oxide
RL: **CAT (Catalyst use)**; USES (Uses)
(beads, radical polymerization initiators from plasma-treated)
IT Polymerization **catalysts**
(radical, plasma-treated inorg. or organic powders for manufacture of processed
fillers and pigments)
IT 9003-01-4P, Poly(acrylic acid) 107741-20-8P, Methyl methacrylate-styrene graft copolymer
RL: IMF (Industrial manufacture); PREP (Preparation)
(plasma-treated particles as radical polymerization initiators for preparation of)
IT **147-14-8, Copper phthalocyanine** blue
9003-53-6, Polystyrene **13463-67-7, Titanium dioxide**, uses 39283-39-1, Quinacridone red 39473-08-0, Irgazin Red
RL: **CAT (Catalyst use)**; USES (Uses)
(radical polymerization initiators from plasma-treated)
IT **147-14-8, Copper phthalocyanine** blue
13463-67-7, Titanium dioxide, uses
RL: **CAT (Catalyst use)**; USES (Uses)
(radical polymerization initiators from plasma-treated)
RN 147-14-8 HCAPLUS

CN Copper, [29H,31H-phthalocyaninato(2-)-κN29,κN30,κN31,.ka
ppa.N32]-, (SP-4-1)- (9CI) (CA INDEX NAME)

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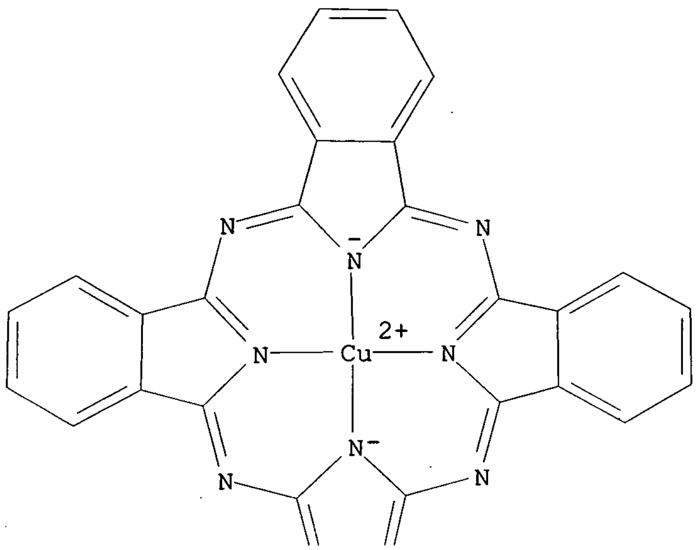
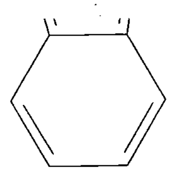


PAGE 2-A



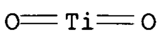
RN 13463-67-7 HCAPLUS
CN Titanium oxide (TiO_2) (8CI, 9CI) (CA INDEX NAME)

O═Ti═O

L111 ANSWER 22 OF 36 HCAPLUS COPYRIGHT 2005 ACS on STN
AN 1993:6655 HCAPLUS
DN 118:6655
ED Entered STN: 10 Jan 1993
TI Photooxidation of hydrocarbons on porphyrin-modified **titanium dioxide** powders
AU Amadelli, R.; Bregola, M.; Polo, E.; Carassiti, V.; Maldotti, A.
CS Dip. Chim., Univ. Ferrara, Ferrara, 44100, Italy

SO Journal of the Chemical Society, Chemical Communications (1992), (18), 1355-7
CODEN: JCCCAT; ISSN: 0022-4936
DT Journal
LA English
CC 24-5 (Alicyclic Compounds)
OS CASREACT 118:6655
AB A **composite catalyst** consisting of an **iron porphyrin** covalently linked to **TiO2** shows a new reactivity in the photochem. mono-oxygenation of hydrocarbons under mild conditions, with respect to the porphyrin and **TiO2** used sep. Silanization deactivates **TiO2** with regard to oxidation/degradation of hydrocarbons to CO2; the production of cyclohexanol and increased yields of monooxygenation products of cyclohexene were observed
ST oxidn **catalyst** hydrocarbon **titanium dioxide** porphyrin; cyclohexene oxidn **catalyst titanium dioxide** porphyrin; cyclohexane oxidn **catalyst titanium dioxide** porphyrin; cyclohexanol oxidn **catalyst titanium dioxide** porphyrin; cyclohexenol oxidn **catalyst titanium dioxide** porphyrin
IT Oxidation, photochemical
(of hydrocarbons in presence of porphyrin-modified silanized **titanium dioxide**)
IT Cycloalkanes
Cycloalkenes
Hydrocarbons, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(photochem. oxidation of, porphyrin-modified silanized **titanium dioxide catalyst** for)
IT Oxidation **catalysts**
(photochem., porphyrin-modified silanized **titanium dioxide**, for hydrocarbons)
IT 124-38-9P, Carbon dioxide, preparation
RL: FORM (Formation, nonpreparative); PREP (Preparation)
(formation of, by oxidation of hydrocarbons over silanized porphyrin-modified **titanium dioxide**)
IT 92-51-3P, 1,1'-Bicyclohexyl
RL: FORM (Formation, nonpreparative); PREP (Preparation)
(formation of, in **titanium dioxide**-catalyzed photochem. oxidation of cyclohexane)
IT **13463-67-7D, Titanium dioxide,** silanized, porphyrin-modified 60489-11-4D, reaction products with silanized **titanium dioxide**
RL: RCT (Reactant); RACT (Reactant or reagent)
(oxidation **catalyst** for hydrocarbons)
IT 110-82-7, Cyclohexane, reactions 110-83-8, Cyclohexene, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(photochem. oxidation of, silanized porphyrin-modified **titanium dioxide catalyst** for)
IT 108-93-0P, Cyclohexanol, preparation 108-94-1P, Cyclohexanone, preparation
RL: SPN (Synthetic preparation); PREP (Preparation)
(preparation of, by oxidation of cyclohexane over silanized porphyrin-modified
titanium dioxide)
IT 286-20-4P, Cyclohexene oxide
RL: SPN (Synthetic preparation); PREP (Preparation)
(preparation of, by oxidation of cyclohexene over porphyrin-modified silanized

titanium dioxide)
IT 25512-62-3P, Cyclohexenone 25512-63-4P, Cyclohexenol
RL: SPN (Synthetic preparation); PREP (Preparation)
(preparation of, by oxidation of cyclohexene over silanized porphyrin-modified
titanium dioxide)
IT **13463-67-7D, Titanium dioxide,** silanized,
porphyrin-modified
RL: RCT (Reactant); RACT (Reactant or reagent)
(oxidation **catalyst** for hydrocarbons)
RN 13463-67-7 HCAPLUS
CN Titanium oxide (TiO_2) (8CI, 9CI) (CA INDEX NAME)

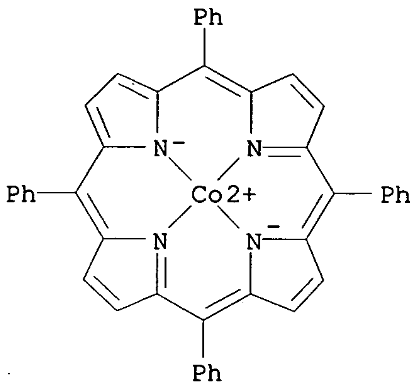


L111 ANSWER 23 OF 36 HCAPLUS COPYRIGHT 2005 ACS on STN
AN 1992:434430 HCAPLUS
DN 117:34430
ED Entered STN: 26 Jul 1992
TI Origins of remarkable catalytic activity of cobalt tetraphenylporphyrin supported on some titanias
AU Mochida, Isao; Kamo, Tetsuro; Fujitsu, Hiroshi
CS Inst. Adv. Mater., Kyushu Univ., Kasuga, 816, Japan
SO Langmuir (1992), 8(3), 909-14
CODEN: LANGD5; ISSN: 0743-7463
DT Journal
LA English
CC 67-2 (Catalysis, Reaction Kinetics, and Inorganic Reaction Mechanisms)
Section cross-reference(s): 66
AB Catalytic activities of CoTPP (cobalt tetraphenylporphyrin) supported on 2 kinds of **titania**, **TiO2**-120s and **TiO2**-300, against CO-O2, NO-CO, and NO-H2 reactions were found to depend remarkably on the **TiO2** and the conditions of preheat treatment in vacuo. CoTPP/**TiO2**-120s-250 (pretreated at 250°) exhibited greater activities for the former 2 reactions than did CoTPP/**TiO2**-300-200 (pretreated at 200°), whereas the latter catalyst exhibited a greater activity for the last reaction. Detailed studies on reaction kinetics, single and competitive adsorption, catalyst poisons, ESR, thermogravimetry during the pretreatment, and the solubility of the supported complex were performed in order to reveal origins of such catalytic performances of CoTPP complex on the **TiO2** surface. Oxidative oligomerization of CoTPP into dimeric or trimeric forms and O vacancy on the reducible **TiO2** surface were induced by the pretreatment in the former catalyst to provide remarkable activation abilities against CO, NO, and O2. In contrast, the original structure of CoTPP is more suitable for the formation of an anion radical in the ligand through the electron donation from the properly dehydrated surface of the rather stable **TiO2** to exhibit better ability for H2.
ST cobalt phenylporphyrin **titania** catalyst oxidn redn
IT Oxidation catalysts
(cobalt tetraphenylporphyrin-**titania**, for **carbon** monoxide, effect of **support** material on activity of)
IT Reduction catalysts
(cobalt tetraphenylporphyrin-**titania**, for nitric oxide, effect of support material on activity of)
IT Kinetics of oxidation

(of carbon monoxide, catalyzed by cobalt tetraphenylporphyrin-
titania, effect of support material on)
IT Kinetics of reduction
(of nitric oxide, catalyzed by cobalt tetraphenylporphyrin-
titania, effect of support material on)
IT Adsorption
(on cobalt tetraphenylporphyrin-**titania** catalysts, effect of
support material on)
IT Adsorbed substances
(water, on cobalt tetraphenylporphyrin-**titania** catalysts,
activity for oxidation of **carbon** monoxide in relation
to)
IT 7732-18-5, Water, vapor
RL: USES (Uses)
(adsorbed, on cobalt tetraphenylporphyrin-**titania** catalysts,
activity for oxidation of **carbon** monoxide in relation
to)
IT 630-08-0, Carbon monoxide, properties
RL: PRP (Properties)
(adsorption and oxidation of, on cobalt tetraphenylporphyrin-
titania catalysts, effect of support material on)
IT 10102-43-9, Nitric oxide, properties
RL: PRP (Properties)
(adsorption and reduction of, on cobalt tetraphenylporphyrin-
titania catalysts, effect of support material on)
IT 1333-74-0, Hydrogen, properties 7782-44-7, Oxygen, properties
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(adsorption of, on cobalt tetraphenylporphyrin-**titania**
catalysts, effect of support material on)
IT **13463-67-7, Titania,** uses
RL: CAT (Catalyst use); USES (Uses)
(catalysts from cobalt tetraphenylporphyrin and, for oxidation of carbon
monoxide and reduction of nitric oxide, effect of support material on
activity of)
IT **14172-90-8**
RL: **CAT (Catalyst use)**; USES (Uses)
(catalysts from **titania** and, for oxidation of carbon monoxide
and reduction of nitric oxide, effect of support material on activity of)
IT **13463-67-7, Titania,** uses
RL: CAT (Catalyst use); USES (Uses)
(catalysts from cobalt tetraphenylporphyrin and, for oxidation of carbon
monoxide and reduction of nitric oxide, effect of support material on
activity of)
RN 13463-67-7 HCAPLUS
CN Titanium oxide (TiO_2) (8CI, 9CI) (CA INDEX NAME)

O=Ti=O

IT **14172-90-8**
RL: **CAT (Catalyst use)**; USES (Uses)
(catalysts from **titania** and, for oxidation of carbon monoxide
and reduction of nitric oxide, effect of support material on activity of)
RN 14172-90-8 HCAPLUS
CN Cobalt, [5,10,15,20-tetraphenyl-21H,23H-porphinato(2-)-
κN21,κN22,κN23,κN24]-, (SP-4-1)- (9CI) (CA INDEX
NAME)



L111 ANSWER 24 OF 36 HCAPLUS COPYRIGHT 2005 ACS on STN
AN 1991:213238 HCAPLUS
DN 114:213238
ED Entered STN: 31 May 1991
TI Catalytic activity of cobalt tetraphenylporphyrin supported on **titania** for reduction of nitric oxide by carbon monoxide
AU Lin, Jia; Cao, Meiqiu; Zhang, Hua
CS Res. Cent. Eco-Environ. Sci., Acad. Sin., Beijing, Peop. Rep. China
SO Huanjing Huaxue (1990), 9(1), 15-20
CODEN: HUHUDB; ISSN: 0254-6108
DT Journal
LA Chinese
CC 59-3 (Air Pollution and Industrial Hygiene)
Section cross-reference(s): 51, 67
AB The catalytic reduction of NO by CO over Co tetraphenylporphyrin supported on **TiO2** (Co-TPP/**TiO2**) was investigated. Metal porphyrin square planar complexes offer their axial sites to coordinates with NO and CO and enhance their reactivities. Co-TPP supported on **TiO2** pretreated by evacuation at 270° exhibited a significant activity for the reduction of NO by CO at .apprx.100°. Such enhancement of catalytic activity may be explained in terms of electron transfer from the support to the complex and an increase of the effective surface area of Co-TPP. Co-TPP was impregnated onto **TiO2** using a benzene solution to give a concentration of 5%(weight/weight). The catalytic reaction was carried out in a 1.2 L circulating reactor. The average reaction rates are 0.52-2.8 mmol/g catalyst-h for 10 min at 80- 50°. Exptl. results indicated that the reduction of NO and formation of N took place simultaneously during the initial stage of the reaction. The catalytic activity of the same catalyst in the second run was decreased to .apprx.50% of the initial activity. Evacuation of the catalyst at 150° for 0.5 h before the repeated use restored the initial activity.
ST cobalt tetraphenylporphyrin exhaust gas catalyst; nitric oxide redn carbon monoxide
IT Reduction catalysts
(cobalt tetraphenylporphyrin, **titania**-supported, for nitric oxide by carbon monoxide)
IT Exhaust gases
(nitric oxide reduction by **carbon** monoxide in, **titania-supported** cobalt tetraphenylporphyrin as catalysts for)
IT **13463-67-7, Titanium dioxide**, uses and

miscellaneous
RL: CAT (Catalyst use); USES (Uses)
(catalyst support, for cobalt tetraphenylporphyrin, for reduction of nitric oxide by carbon monoxide)

IT **14172-90-8**
RL: **CAT (Catalyst use)**; USES (Uses)
(catalyst, **titania**-supported, for reduction of nitric oxide by carbon monoxide)

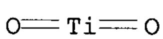
IT 630-08-0
RL: OCCU (Occurrence)
(exhaust gases, nitric oxide reduction by **carbon** monoxide in, **titania-supported** cobalt tetraphenylporphyrin as catalysts for)

IT 630-08-0, Carbon monoxide, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(nitric oxide reduction by, **titania**-supported cobalt tetraphenylporphyrin as catalyst for, in exhaust gas treatment)

IT 10102-43-9, Nitric oxide, uses and miscellaneous
RL: REM (Removal or disposal); PROC (Process)
(removal of, from exhaust gas, by reduction with **carbon** monoxide, **titania-supported** cobalt tetraphenylporphyrin as catalyst for)

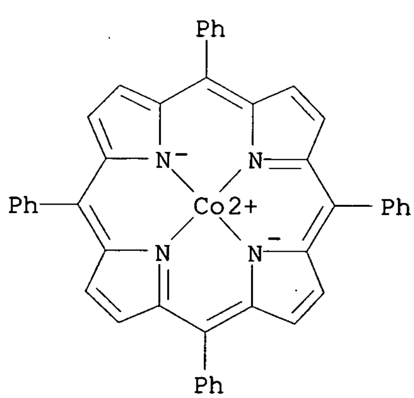
IT **13463-67-7, Titanium dioxide**, uses and miscellaneous
RL: CAT (Catalyst use); USES (Uses)
(catalyst support, for cobalt tetraphenylporphyrin, for reduction of nitric oxide by carbon monoxide)

RN 13463-67-7 HCAPLUS
CN Titanium oxide (TiO_2) (8CI, 9CI) (CA INDEX NAME)



IT **14172-90-8**
RL: **CAT (Catalyst use)**; USES (Uses)
(catalyst, **titania**-supported, for reduction of nitric oxide by carbon monoxide)

RN 14172-90-8 HCAPLUS
CN Cobalt, [5,10,15,20-tetraphenyl-21H,23H-porphinato(2-)-κN21,κN22,κN23,κN24]-, (SP-4-1)- (9CI) (CA INDEX NAME)



L111 ANSWER 25 OF 36 HCAPLUS COPYRIGHT 2005 ACS on STN DUPLICATE 2
AN 1989:236742 HCAPLUS
DN 110:236742
ED Entered STN: 25 Jun 1989
TI **Composite** photocatalyst for refractory waste degradation
IN Langford, Cooper H.; Mak, Mark K. S.; Crouch, Andrew M.
PA Canadian Patents and Development Ltd., Can.
SO U.S., 6 pp.
CODEN: USXXAM
DT Patent
LA English
IC ICM B01J031-22
NCL 502159000
CC 60-4 (Waste Treatment and Disposal)
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 4806514	A	19890221	US 1987-103024	19870930
	CA 1287829	A1	19910820	CA 1986-519650	19861002
PRAI	CA 1986-519650	A	19861002		

CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
US 4806514	ICM	B01J031-22
	NCL	502159000

AB The **composite** photocatalyst for refractory waste degradation, especially for refractory materials like PCBs in oil, comprises particles of a wide band gap semiconductor material selected from **TiO2**, CdS, and CdSe, where the particles are coated with a polymer film capable of absorbing the refractory substrate to be degraded. The polymer film comprises a pyridine-containing polymer and a divalent metal porphyrin or metal phthalocyanine dye which is dispersed through the film and bonded to the polymer. When the refractory waste is mixed with the **catalyst** and irradiated with 300-400 nm light, the **catalyst** generates reactive species in the film that oxidize the absorbed substrate. In one case, the **catalyst** is **TiO2** coated with polyvinylpyridine or styrene-vinylpyridine copolymer containing the dye **Zn tetraphenylporphyrin** where the **Zn**:pyridine mol ratio is >1:8.
ST refractory waste degrdn photocatalyst; PCB degrdn **composite** photocatalyst; polychlorinated biphenyl degrdn photocatalyst
IT Photolysis **catalysts**
(for refractory waste degradation)
IT Dyes
(porphyrin or phthalocyanine, reaction products with pyridine-containing polymers, photocatalyst containing, for refractory waste degradation)
IT Polymers, uses and miscellaneous
RL: **CAT (Catalyst use)**; USES (Uses)
(pyridine-containing, reaction products with dyes, photocatalyst containing, for refractory waste degradation)
IT Wastes
(refractory, degradation of, photocatalyst for)
IT Aromatic hydrocarbons, uses and miscellaneous
RL: PROC (Process)
(chloro, degradation of waste, photocatalyst for)
IT 92-52-4D, Biphenyl, chloro derivs. 95-50-1, O-Dichlorobenzene
11097-69-1, Aroclor 1254 12674-11-2, Aroclor 1016 12767-79-2, Aroclor

52663-71-5D, 2,2',3,3',4,4',6-Heptachlorobiphenyl, isomers
RL: PROC (Process)
(degradation of waste, photocatalyst for)

IT 147-14-8D, **Copper phthalocyanine**, reaction products with pyridine-containing polymers 1306-23-6, Cadmium sulfide, uses and miscellaneous 1306-24-7, Cadmium selenide, uses and miscellaneous 9003-47-8D, Polyvinylpyridine, reaction products with dyes 9019-70-9D, reaction products with dyes **13463-67-7, Titanium dioxide**, uses and miscellaneous 14074-80-7D, **Zinc tetraphenylporphyrin**, reaction products with pyridine-containing polymers 14187-13-4D, Palladium tetraphenylporphyrin, reaction products with pyridine-containing polymers 14640-21-2D, Magnesium tetraphenylporphyrin, reaction products with pyridine-containing polymers
RL: **CAT (Catalyst use)**; USES (Uses)
(photocatalyst containing, for refractory waste degradation)

IT **13463-67-7, Titanium dioxide**, uses and miscellaneous
RL: **CAT (Catalyst use)**; USES (Uses)
(photocatalyst containing, for refractory waste degradation)

RN 13463-67-7 HCAPLUS
CN Titanium oxide (TiO_2) (8CI, 9CI) (CA INDEX NAME)

O═Ti═O

L111 ANSWER 26 OF 36 HCAPLUS COPYRIGHT 2005 ACS on STN
AN 1989:518049 HCAPLUS
DN 111:118049
ED Entered STN: 01 Oct 1989
TI Method for continuous sweetening of petroleum fractions in the liquid phase
IN Mimoun, Hubert; Bonnaudet, Serge; Bigeard, Pierre Henri; Miquel, Gerard; Cohen, Georges
PA Institut Francais du Petrole, Fr.
SO Ger. Offen., 8 pp.
CODEN: GWXXBX
DT Patent
LA German
IC ICM C10G027-06
ICS C10G019-04
CC 51-9 (Fossil Fuels, Derivatives, and Related Products)
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	DE 3828603	A1	19890309	DE 1988-3828603	19880823
	DE 3828603	C2	19970605		
	FR 2619822	A1	19890303	FR 1987-11876	19870824
	FR 2619822	B1	19900112		
	JP 01070592	A2	19890316	JP 1988-210385	19880824
	JP 2592660	B2	19970319		
PRAI	FR 1987-11876	A	19870824		

CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
DE 3828603	ICM	C10G027-06
	ICS	C10G019-04
DE 3828603	ECLA	C10G027/10

AB A method for continuous sweetening of petroleum fractions (e.g., kerosine and gas oils) in the liquid phase comprises contacting the charge with a catalytic, aqueous 1 alc. solution, containing an organometallic chelate, an alkali
agent and an oxide agent in a lining-containing reaction zone. The aqueous/ak. alkali phase is separated and recycled until the sweetened hydrocarbon-containing
charge, containing less amts. of alc., can be water washed and collected. The alc. entrained with the washing water is recovered by distillation and subsequently recycled.

ST petroleum fraction liq phase sweetening; kerosine sweetening catalytic alkali chelate; gas oil sweetening reactor lining; alc organometallic chelate petroleum sweetening

IT Aluminosilicates, uses and miscellaneous
Bauxite
Clays, uses and miscellaneous
Coke
Fuller's earth
Kaolin, uses and miscellaneous
Kieselguhr
Silica gel, uses and miscellaneous
Silicates, uses and miscellaneous
Zeolites, uses and miscellaneous
RL: USES (Uses)
(reactor with lining of, continuous sweetening of petroleum fractions in, in presence of catalytic aqueous/alc. solns.)

IT Thiols, uses and miscellaneous
RL: REM (Removal or disposal); PROC (Process)
(removal of, from gasoline, continuous liquid-phase sweetening in)

IT Petroleum refining
(sweetening, liquid-phase, continuous)

IT Petroleum refining catalysts
(sweetening, sulfonated cobalt phthalocyanine, in alkali aqueous/ak. solns., for kerosine and gas oils)

IT **7440-44-0, Carbon**, uses and miscellaneous
RL: USES (Uses)
(**activated**, reactor with lining of, continuous sweetening of petroleum fractions in, in presence of catalytic aqueous/alc. solns.)

IT 64-17-5, Ethanol, uses and miscellaneous 67-56-1, Methanol, uses and miscellaneous 67-63-0, Isopropanol, uses and miscellaneous 71-23-8, n-Propanol, uses and miscellaneous 71-36-3, n-Butanol, uses and miscellaneous 71-41-0, n-Pentanol, uses and miscellaneous 78-83-1, Isobutanol, uses and miscellaneous 104-76-7, Ethyl-2-hexanol 111-27-3, n-Hexanol, uses and miscellaneous 123-51-3, Isopentanol 626-89-1, Isohexanol
RL: USES (Uses)
(alkali solns. containing catalysts and, for continuous sweetening of petroleum fractions, in liquid phase)

IT 1335-30-4
RL: USES (Uses)
(aluminosilicates, reactor with lining of, continuous sweetening of petroleum fractions in, in presence of catalytic aqueous/alc. solns.)

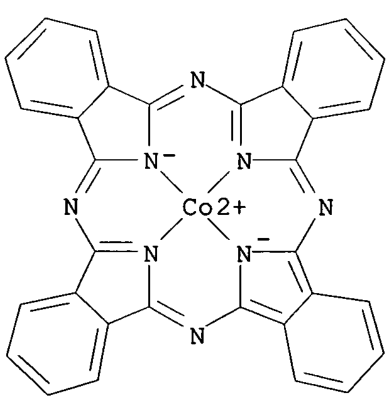
IT 1310-58-3, Potassium hydroxide, uses and miscellaneous 1310-65-2, Lithium hydroxide 1310-73-2, Sodium hydroxide, uses and miscellaneous 7664-41-7, Ammonia, uses and miscellaneous
RL: USES (Uses)
(aqueous/alc. solns. containing catalysts and, for continuous sweetening of petroleum fractions, in liquid phase)

IT **3317-67-7D**, sulfonated or carboxylated **15612-49-4**

RL: **CAT (Catalyst use)**; USES (Uses)
(catalysts, alkali aqueous/alc. solns. containing, for continuous sweetening of
petroleum fractions, in liquid phase)
IT 409-21-2, Silicon carbide, uses and miscellaneous 1303-86-2, Boron oxide, uses and miscellaneous 1309-48-4, Magnesium oxide, uses and miscellaneous 1314-23-4, Zirconium oxide, uses and miscellaneous 1344-28-1, Aluminum oxide, uses and miscellaneous **7440-44-0**, Carbon, uses and miscellaneous 7631-86-9, Silicon dioxide, uses and miscellaneous **13463-67-7**, Titanium oxide, uses and miscellaneous
RL: USES (Uses)
(reactor with lining of, continuous sweetening of petroleum fractions in, in presence of catalytic aqueous/alc. solns.)
IT 75-66-1, tert-Butylmercaptan
RL: REM (Removal or disposal); PROC (Process)
(removal of, from kerosine, continuous liquid-phase sweetening in)
IT 1335-30-4
RL: USES (Uses)
(zeolites, reactor with lining of, continuous sweetening of petroleum fractions in, in presence of catalytic aqueous/alc. solns.)
IT **7440-44-0, Carbon**, uses and miscellaneous
RL: USES (Uses)
(**activated**, reactor with lining of, continuous sweetening of petroleum fractions in, in presence of catalytic aqueous/alc. solns.)
RN 7440-44-0 HCAPLUS
CN Carbon (7CI, 8CI, 9CI) (CA INDEX NAME)

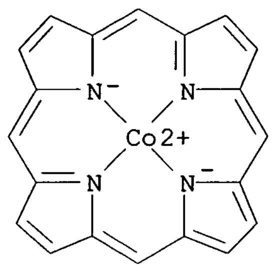
C

IT **3317-67-7D**, sulfonated or carboxylated **15612-49-4**
RL: **CAT (Catalyst use)**; USES (Uses)
(catalysts, alkali aqueous/alc. solns. containing, for continuous sweetening of
petroleum fractions, in liquid phase)
RN 3317-67-7 HCAPLUS
CN Cobalt, [29H,31H-phthalocyaninato(2-)-κN29,κN30,κN31,.ka
ppa.N32]-, (SP-4-1)- (9CI) (CA INDEX NAME)



RN 15612-49-4 HCAPLUS
CN Cobalt, [21H,23H-porphinato(2-)-κN21,κN22,κN23,κN2

4]-, (SP-4-1)- (9CI) (CA INDEX NAME)



IT **7440-44-0**, Carbon, uses and miscellaneous **13463-67-7**, Titanium oxide, uses and miscellaneous
RL: USES (Uses)
(reactor with lining of, continuous sweetening of petroleum fractions in, in presence of catalytic aqueous/alc. solns.)
RN 7440-44-0 HCAPLUS
CN Carbon (7CI, 8CI, 9CI) (CA INDEX NAME)

C

RN 13463-67-7 HCAPLUS
CN Titanium oxide (TiO2) (8CI, 9CI) (CA INDEX NAME)

O═Ti═O

L111 ANSWER 27 OF 36 HCAPLUS COPYRIGHT 2005 ACS on STN
AN 1988:211092 HCAPLUS
DN 108:211092
ED Entered STN: 11 Jun 1988
TI Elucidation of chemical interaction in the macrocyclic metal complex-metal oxide systems and application of their functions
AU Mochida, Isao
CS Inst. Adv. Mater. Study, Kyushu Univ., Fukuoka, 816, Japan
SO Kenkyu Hokoku - Asahi Garasu Kogyo Gijutsu Shoreikai (1987), 50, 177-85
CODEN: AGKGAA; ISSN: 0365-2599
DT Journal
LA Japanese
CC 67-2 (Catalysis, Reaction Kinetics, and Inorganic Reaction Mechanisms)
Section cross-reference(s): 66
AB The dependence of catalytic properties of **TiO2**-supported CoTPP (Co tetraphenylporphyrin complex) on support nature and preheating conditions was examined for 2 kinds of supported CoTPP catalysts. Kinetic studied were made for CO-O2, NO-CO, and NO-H2 reactions. Adsorption of 1 or 2 components, catalyst poisoning, ESR data, thermogravimetry during preheating, and solubility of supported CoTPP are discussed. One **catalyst** was **prepared** by impregnating **TiO2** **prepared** from TiO(SO4) by calcination at 120° with a C6H6 solution of CoTPP and heating in vacuum at 250° before use. The other **catalyst** was **prepared** in the similar way except that the

calcination and preheating temps. were 300° and 200°, resp.
The effect of preadsorption of H2O or O2 was examined on the CO-O2 reaction.
ESR spectra were taken in the absence and presence of O2. The catalyst
activities depend greatly on the support nature and on the preheating
temps. For the CO-O2 and NO-CO reactions, the 1st catalyst is more
active, while the activity order is reversed for the NO-H2 reaction.
Preheating the first catalyst causes oxidative dimerization of CoTPP and
generation of O vacancies on the **TiO2** surface to provide sites
with high activation capability for CO, NO, and O2, whereas preheating the
2nd catalyst causes electron donation to CoTPP (with no structural change)
from completely dehydrated **TiO2** surface, and the ligand anion
radical which is formed displays a high activation ability for H2. Separation
of CO from mixed gases by the 1st catalyst is discussed.

ST oxidn catalyst cobalt porphyrin support; **titania** support cobalt
porphyrin catalyst; nitric oxide oxidn carbon monoxide; hydrogen nitric
oxide reaction; adsorption cobalt porphyrin **titania** catalyst

IT Oxidation catalysts
(cobalt tetraphenylporphyrin-**titania**, for carbon monoxide)

IT **14172-90-8**, Cobalt tetraphenylporphine
RL: **CAT (Catalyst use)**; USES (Uses)
(catalyst, **titania-supported**, for oxidation of
carbon monoxide)

IT **13463-67-7**, **Titania**, uses and miscellaneous
RL: CAT (Catalyst use); USES (Uses)
(catalyst, with cobalt tetraphenylporphyrin, surface characteristics
of)

IT 10102-43-9, Nitric oxide, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(oxidation by, of carbon monoxide or hydrogen on cobalt
tetraphenylporphyrin-**titania** catalysts)

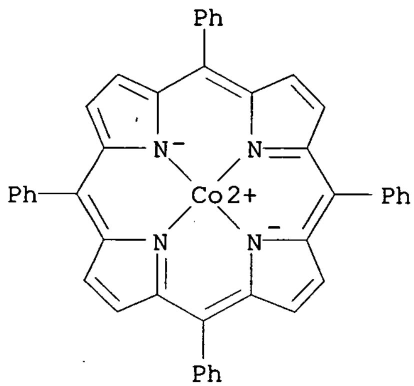
IT 630-08-0, Carbon monoxide, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(oxidation of, on cobalt tetraphenylporphyrin-**titania** catalyst)

IT 1333-74-0, Hydrogen, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(reaction of, with nitric oxide on cobalt tetraphenylporphine-
titania catalyst)

IT **14172-90-8**, Cobalt tetraphenylporphine
RL: **CAT (Catalyst use)**; USES (Uses)
(catalyst, **titania-supported**, for oxidation of
carbon monoxide)

RN 14172-90-8 HCAPLUS

CN Cobalt, [5,10,15,20-tetraphenyl-21H,23H-porphinato(2-)-
κN21,κN22,κN23,κN24]-, (SP-4-1)- (9CI) (CA INDEX
NAME)



IT **13463-67-7, Titania,** uses and miscellaneous
RL: CAT (Catalyst use); USES (Uses)
(catalyst, with cobalt tetraphenylporphyrin, surface characteristics of)
RN 13463-67-7 HCAPLUS
CN Titanium oxide (TiO2) (8CI, 9CI) (CA INDEX NAME)

O═Ti═O

L111 ANSWER 28 OF 36 HCAPLUS
AN 1986:156558 HCAPLUS
DN 104:156558
ED Entered STN: 03 May 1986
TI The kinetics and mechanisms of the photo-assisted reactions of hybrid **catalysts**: hydrogen peroxide production and sulfur dioxide oxidation
AU Hong, A. P.; Hoffmann, M. R.
CS Keck Lab., California Inst. Technol., Pasadena, CA, 91125, USA
SO Preprints - American Chemical Society, Division of Petroleum Chemistry (1986), 31(2), 555-61
CODEN: ACPCAT; ISSN: 0569-3799
DT Journal
LA English
CC 67-2 (Catalysis, Reaction Kinetics, and Inorganic Reaction Mechanisms)
Section cross-reference(s): 74
AB The **TiO2-Co-tetrasulfophthalocyanine catalyst** showed the ability to convert light energy to redox potential and to promote H2O2 production A quantum efficiency of 0.84 was observed for O2 reduction
ST **titania cobalt phthalocyanine** photocatalyst; hydrogen peroxide prodn photocatalyst; sulfur dioxide oxidn photocatalyst
IT Reduction **catalysts**
(**cobalt tetrasulfophthalocyanine-titania,** for oxygen conversion to hydrogen peroxide)
IT Oxidation **catalysts**
(photo-, **cobalt tetrasulfophthalocyanine-titania,** for sulfur dioxide)
IT 7446-09-5, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)

(oxidation of, **composite** photocatalyst for)
IT **13463-67-7**, uses and miscellaneous
RL: USES (Uses)
(photocatalyst from **cobalt tetrasulfophthalocyanine** and, for hydrogen peroxide production)
IT 7722-84-1P, preparation
RL: PREP (Preparation)
(preparation of, by oxygen reduction, **composite** photocatalyst for)
IT 7782-44-7, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(reduction of, to hydrogen peroxide, **composite** photocatalyst in)
IT **13463-67-7**, uses and miscellaneous
RL: USES (Uses)
(photocatalyst from **cobalt tetrasulfophthalocyanine** and, for hydrogen peroxide production)
RN 13463-67-7 HCAPLUS
CN Titanium oxide (TiO_2) (8CI, 9CI) (CA INDEX NAME)

O=Ti=O

L111 ANSWER 29 OF 36 HCAPLUS COPYRIGHT 2005 ACS on STN
AN 1985:226727 HCAPLUS
DN 102:226727
ED Entered STN: 29 Jun 1985
TI Hydrated titanium oxide loaded with cobalt-tetraphenyl-porphine as oxidation catalyst for carbon monoxide and hydrogen
PA Titan Kogyo K. K., Japan
SO Jpn. Kokai Tokkyo Koho, 6 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
IC ICM B01J031-22
ICS B01D053-36; B01J031-38
CC 67-1 (Catalysis, Reaction Kinetics, and Inorganic Reaction Mechanisms)
FAN.CNT 1

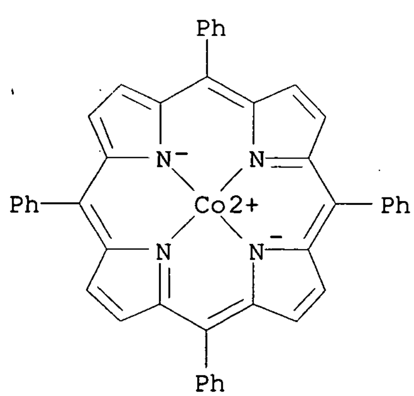
	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 60031827	A2	19850218	JP 1983-140498	19830802
	JP 04011258	B4	19920227		
PRAI	JP 1983-140498		19830802		

CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
JP 60031827	ICM	B01J031-22
	ICS	B01D053-36; B01J031-38

AB Metatitanic acid is dried at ≤300°, the hydrated **TiO2** of sp. surface area ≥170 m2/g is loaded with 1-30% Co-tetraphenylporphine(I), optionally further evacuated at 150-350°, and is used for oxidation of CO and H2 with NO and of CO with O2. Thus, metatitanic acid from aqueous TiOSO4 hydrolysis was washed, dried at 120°, 10 g **TiO2**.xH2O (241.7 m2/g) was stirred in 500 mL C6H6 containing 0.5 g I overnight, evaporated to dryness to be loaded with 5% I, and evacuated at 250° for 2 h. A 800 mL mixture of NO 10 and CO 20 torr; CO 5 and O2 10; or NO 2 and H2 20 was circulated over the 4 g catalyst at 500 mL/min and 100°, 0-17°, or 100°,

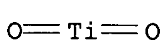
resp. The NO reduction, CO oxidation after 15 min each, and NO reduction after 45
min were all 100%.
ST oxidn catalyst **titania** cobalt porphyrin; carbon monoxide oxidn catalyst; hydrogen oxidn catalyst
IT Oxidation catalysts
(cobalt tetraphenylporphine complex-**titania,** for carbon monoxide and hydrogen)
IT **14172-90-8**
RL: **CAT (Catalyst use)**; USES (Uses)
(catalyst, on **titania support,** for oxidation of **carbon** monoxide and hydrogen)
IT **13463-67-7,** uses and miscellaneous
RL: CAT (Catalyst use); USES (Uses)
(catalyst, with cobalt tetraphenylporphine for oxidation of carbon monoxide and hydrogen)
IT 10102-43-9, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(oxidation by, of carbon monoxide and hydrogen on cobalt tetraphenylporphine complex-**titania** catalyst)
IT 630-08-0, reactions 1333-74-0, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(oxidation of, on cobalt tetraphenylporphine-**titania** catalyst)
IT **14172-90-8**
RL: **CAT (Catalyst use)**; USES (Uses)
(catalyst, on **titania support,** for oxidation of **carbon** monoxide and hydrogen)
RN 14172-90-8 HCAPLUS
CN Cobalt, [5,10,15,20-tetraphenyl-21H,23H-porphinato(2-)-κN21,κN22,κN23,κN24]-, (SP-4-1)- (9CI) (CA INDEX NAME)



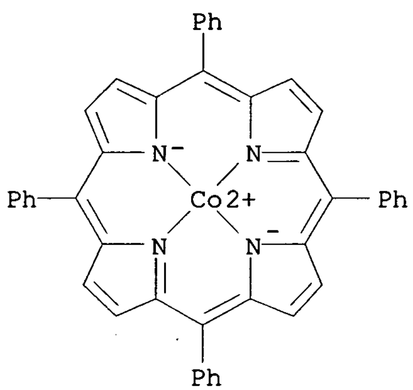
IT **13463-67-7,** uses and miscellaneous
RL: CAT (Catalyst use); USES (Uses)
(catalyst, with cobalt tetraphenylporphine for oxidation of carbon monoxide and hydrogen)
RN 13463-67-7 HCAPLUS
CN Titanium oxide (TiO_2) (8CI, 9CI) (CA INDEX NAME)

$O{=}Ti{=}O$

L111 ANSWER 30 OF 36 HCAPLUS
AN 1985:601538 HCAPLUS
DN 103:201538
ED Entered STN: 14 Dec 1985
TI Remarkable catalytic activity of cobalt tetraphenylporphyrin modified on a **titania** for the oxidation of carbon monoxide below room temperature
AU Mochida, Isao; Iwai, Yasuo; Kamo, Tetsuro; Fujitsu, Hiroshi
CS Grad. Sch. Eng. Sci., Kyushu Univ., Kasuga, 816, Japan
SO Journal of Physical Chemistry (1985), 89(25), 5439-42
CODEN: JPCHAX; ISSN: 0022-3654
DT Journal
LA English
CC 67-2 (Catalysis, Reaction Kinetics, and Inorganic Reaction Mechanisms)
AB CobaltTPP (tetraphenylporphin) on **TiO2** (prepared by TiOSO4 hydrolysis at 120° with seeds) modified at 250° under vacuum catalytically oxidized CO rapidly with O even at -79°. Its catalytic activity was higher than that of com. Hopcalite. Comparison of its catalytic performance with those of the same catalyst or different **TiO2** supporting catalyst both evacuated at 200° revealed unique features of the present catalyst in terms of its O adsorption, the poisoning of adsorbed O, and the insoly. of the complex in C6H6. Both significant structural modification of the complex and its strong interaction with properly dehydrated **TiO2**-120s brought about by evacuation at 250° may induce such extraordinary activity.
ST cobalt porphyrin **titania** oxidn catalyst; carbon monoxide low temp oxidn
IT Oxidation catalysts
(cobalt tetraphenylporphyrin-**titania**, for carbon monoxide at lower temperature)
IT 7782-44-7, properties
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(adsorption of, on cobalt tetraphenylporphyrin-**titania** catalyst, partial irreversibility of)
IT **13463-67-7**, uses and miscellaneous
RL: CAT (Catalyst use); USES (Uses)
(catalyst, with cobalt tetraphenylporphyrin for oxidation of carbon monoxide below room temperature)
IT **14172-90-8**
RL: **CAT (Catalyst use)**; USES (Uses)
(catalysts, **titania-supported**, for oxidation of **carbon** monoxide below room temperature)
IT 630-08-0, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(oxidation of, on cobalt tetraphenylporphyrin-**titania** catalyst below room temperature)
IT **13463-67-7**, uses and miscellaneous
RL: CAT (Catalyst use); USES (Uses)
(catalyst, with cobalt tetraphenylporphyrin for oxidation of carbon monoxide below room temperature)
RN 13463-67-7 HCAPLUS
CN Titanium oxide (TiO2) (8CI, 9CI) (CA INDEX NAME)



IT **14172-90-8**
RL: **CAT (Catalyst use)**; USES (Uses)
(catalysts, **titania-supported**, for oxidation of **carbon** monoxide below room temperature)
RN 14172-90-8 HCAPLUS
CN Cobalt, [5,10,15,20-tetraphenyl-21H,23H-porphinato(2-)-κN21,κN22,κN23,κN24]-, (SP-4-1)- (9CI) (CA INDEX NAME)



L111 ANSWER 31 OF 36 HCAPLUS
AN 1986:614487 HCAPLUS
DN 105:214487
ED Entered STN: 13 Dec 1986
TI Elucidation of chemical interaction in the macrocyclic metal complex-metal oxide systems and application of their functions
AU Mochida, Isao
CS Res. Inst. Ind. Sci., Kyushu Univ., Fukuoka, 812, Japan
SO Kenkyu Hokoku - Asahi Garasu Kogyo Gijutsu Shoreikai (1985), 47, 243-9
CODEN: AGKGAA; ISSN: 0365-2599
DT Journal
LA Japanese
CC 67-2 (Catalysis, Reaction Kinetics, and Inorganic Reaction Mechanisms)
AB The catalytic activity and chemical interactions of Co Ph4 porphyrin complex (COTPP) supported on **TiO2** were studied. It showed remarkable catalytic activities in the reduction of NO with CO and in the oxidation of CO with O2 even at -79°. Its activity was 6 times larger than that of a com. Hopcalite catalyst. Evacuation at 250° caused dimerization of COTPP and modification of the surface structure of **TiO2** both of which enhanced the electron transfer from **TiO2** to the complex and enabled both the complex and the oxide to participate in the reaction. SiO2 and NiO also showed remarkable catalytic activity with this complex.
ST cobalt phenyl porphyrin **titania** catalyst; nitric oxide redn porphyrin **titania** catalyst; carbon monoxide oxidn porphyrin **titania** catalyst; silica cobalt phenyl porphyrin catalyst; nickel oxide cobalt phenyl porphyrin catalyst
IT Oxidation catalysts
(cobalt tetraphenylporphyrin-**titania**, for carbon monoxide)
IT Reduction catalysts
(cobalt triphenylporphyrin-**titania**, for nitric oxide, by carbon monoxide)
IT 1313-99-1, uses and miscellaneous

RL: CAT (Catalyst use); USES (Uses)
(catalysts from cobalt tetraphenylporphyrin and)

IT **13463-67-7**, uses and miscellaneous
RL: CAT (Catalyst use); USES (Uses)
(catalysts from cobalt tetraphenylporphyrin and, for reduction of nitric oxide by carbon monoxide and for oxidation of **carbon** monoxide, **activity** in relation to electron transfer in)

IT **14172-90-8**
RL: **CAT (Catalyst use)**; USES (Uses)
(catalysts from **titania** and, for reduction of nitric oxide by carbon monoxide and for oxidation of **carbon** monoxide, **activity** in relation to electron transfer in)

IT 630-08-0, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(oxidation of, by nitric oxide or oxygen, on cobalt tetraphenylporphyrin-**titania** catalysts)

IT 10102-43-9, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(reduction of, by carbon monoxide, on cobalt tetra-Ph porphyrin-**titania** catalysts)

IT **13463-67-7**, uses and miscellaneous
RL: CAT (Catalyst use); USES (Uses)
(catalysts from cobalt tetraphenylporphyrin and, for reduction of nitric oxide by carbon monoxide and for oxidation of **carbon** monoxide, **activity** in relation to electron transfer in)

RN 13463-67-7 HCAPLUS

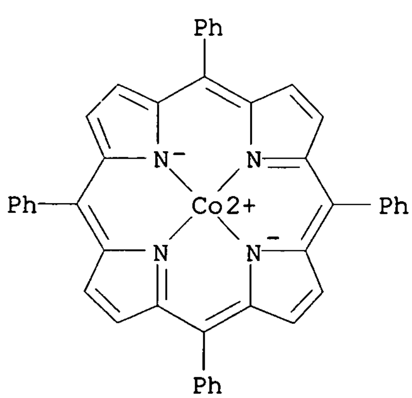
CN Titanium oxide (TiO_2) (8CI, 9CI) (CA INDEX NAME)

O═Ti═O

IT **14172-90-8**
RL: **CAT (Catalyst use)**; USES (Uses)
(catalysts from **titania** and, for reduction of nitric oxide by carbon monoxide and for oxidation of **carbon** monoxide, **activity** in relation to electron transfer in)

RN 14172-90-8 HCAPLUS

CN Cobalt, [5,10,15,20-tetraphenyl-21H,23H-porphinato(2-)-κN21,κN22,κN23,κN24]-, (SP-4-1)- (9CI) (CA INDEX NAME)



L111 ANSWER 32 OF 36 WPIX COPYRIGHT 2005 THE THOMSON CORP on STN
AN 1984-271484 [44] WPIX
DNC C1984-114891
TI Silanic phthalocyanine dyes and **composite** pigments - by reaction with inorganic supports have turquoise shades and excellent fastness properties.
DC A60 F06 G02
IN CARLINI, F M; MARANZANA, G; MARRACCINI, A; PASQUALE, A
PA (MONT) MONTEDISON SPA
CYC 9
PI EP 123577 A 19841031 (198444)* EN 23
R: BE DE FR GB NL
JP 59179565 A 19841012 (198447)
US 4568493 A 19860204 (198608)
CA 1221362 A 19870505 (198722)
EP 123577 B 19870603 (198722) EN
R: BE DE FR GB NL
DE 3464060 G 19870709 (198728)
IT 1163161 B 19870408 (198925)
ADT EP 123577 A EP 1984-400555 19840320; JP 59179565 A JP 1984-49385 19840316; US 4568493 A US 1984-590338 19840316
PRAI IT 1983-20199 19830322
REP US 3981859
IC C09B047-26; C09B069-00; C09C001-36; C09C003-08
AB EP 123577 A UPAB: 19930925
Silane gp.-containing dyes of formula (I) are new. Pc= **phthalocyanine** residue, opt. metallised with **Co**, Ni, Cu; R1=H or alkali metal; R2, R3=same or different, H, 1-4C alkyl, cycloalkyl or aryl; R4=1-4C alkyl or phenyl; R5=1-4C alkoxy; n=3-5; q=0 and p=3, m=0-3 or q=1 and p=2, m=0-2; a,c=1-3; and b=0-2, such that a+b+c=maximum 4; and each benzene ring of Pc has only one of above sulphonic or sulphonamide gps.
Composite silanic pigments comprise dyes (I) grafted on inorganic supports (II) from **TiO2** gel, semi-crystalline, rutile or anastase; mixts. of **TiO2** with SiO2 and/or Al2O3; SiO2 and/or Al2O3 finely comminuted; having specific surface 5-500, especially 10-200 sq.m./g.
ADVANTAGE - The dyes have excellent light fastness and high dyeing power. The **composite** pigments are low cost and have good hiding power, excellent resistance to solvents, stability against crystallisation and non-flocculating character. The dyes form chemical bonds with the substrates.
0/0
FS CPI
FA AB
MC CPI: A08-E03; A08-E04; F03-F02; F03-F03; F03-F16; G01-B; G02-A03A; G02-A04B.

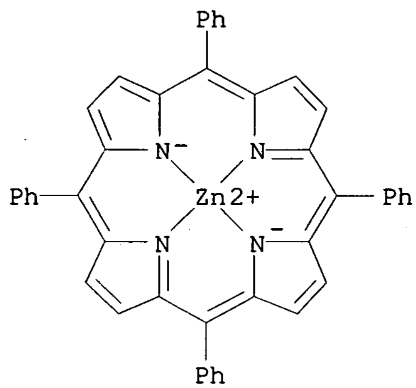
L111 ANSWER 33 OF 36 HCAPLUS COPYRIGHT 2005 ACS on STN
AN 1984:617146 HCAPLUS
DN 101:217146
TI A **composite** photocatalyst for oxidation of sulfur dioxide
AU Langford, C. H.; Saint-Joly, C.; Pelletier, E.; Persaud, L.; Crouch, A.; Arbour, C.
CS Chem. Dep., Concordia Univ., Montreal, QC, H3G 1M8, Can.
SO Studies in Surface Science and Catalysis (1984), 19(Catal. Energy Scene), 291-6
CODEN: SSCTDM; ISSN: 0167-2991
DT Journal

LA English
CC 67-2 (Catalysis, Reaction Kinetics, and Inorganic Reaction Mechanisms)
Section cross-reference(s): 72, 74
AB Photoelectrochem. expts. were conducted with **Zn tetraphenylporphyrin**-coated Sn oxide electrodes. Anatase particles loaded with a small amount of Pt were coated with polyvinylpyridine-**Zn tetraphenylporphyrin**. A reversible SnO electrode was obtained by coating from pyridine solution The **composite catalyst** apparently operates by photochem. electron transfer from porphyrin to semiconductor support. Efficiency and reversibility depend on photoproduct transport to the site of further reaction (SO_2 oxidation by oxidized porphyrin). The balancing reduction process occurs at the Pt coating.
ST photoredox **catalyst zinc porphyrin**; sulfur dioxide photooxidn **catalyst**; semiconductor oxide electrode photocatalyst; tin oxide electrode photocatalyst
IT Semiconductor materials
(oxides, with **zinc tetraphenylporphyrin** coatings, **catalysts**, for photooxidn of sulfur dioxide)
IT Oxidation **catalysts**
(photoelectrochem., **zinc tetraphenylporphyrin** -coated semiconductor oxide electrodes as, for sulfur dioxide)
IT 21651-19-4
RL: **CAT (Catalyst use)**; USES (Uses)
(**catalysts**, coated with **zinc triphenylporphyrin** for photooxidn. of sulfur dioxide)
IT **13463-67-7**, uses and miscellaneous
RL: **CAT (Catalyst use)**; USES (Uses)
(**catalysts**, containing platinum and coated with **zinc tetraphenylporphyrin** for photooxidn. sulfur dioxide)
IT **14074-80-7**
RL: **CAT (Catalyst use)**; USES (Uses)
(**catalysts**, semiconductor oxide electrodes coated with, for photooxidn. of sulfur dioxide)
IT 7440-06-4, uses and miscellaneous
RL: **CAT (Catalyst use)**; USES (Uses)
(**catalysts, titania** particles coated with **zinc tetraphenylporphyrin** containing, for photooxidn. of sulfur dioxide)
IT 7446-09-5, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(photooxidn. of, **preparation** of **zinc tetraphenylporphyrin**-coated **catalyst** for)
IT **13463-67-7**, uses and miscellaneous
RL: **CAT (Catalyst use)**; USES (Uses)
(**catalysts**, containing platinum and coated with **zinc tetraphenylporphyrin** for photooxidn. sulfur dioxide)
RN 13463-67-7 HCAPLUS
CN Titanium oxide (TiO_2) (8CI, 9CI) (CA INDEX NAME)

O═Ti═O

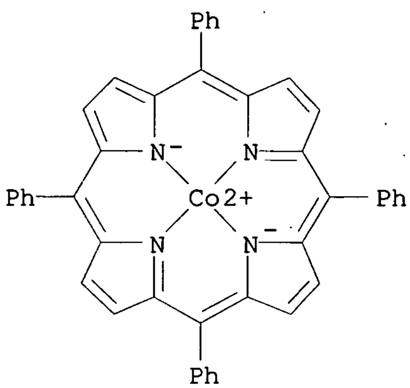
IT **14074-80-7**
RL: **CAT (Catalyst use)**; USES (Uses)
(**catalysts**, semiconductor oxide electrodes coated with, for photooxidn. of sulfur dioxide)

RN 14074-80-7 HCAPLUS
CN Zinc, [5,10,15,20-tetraphenyl-21H,23H-porphinato(2-)-κN21,κN22,κN23,κN24]-, (SP-4-1)- (9CI) (CA INDEX NAME)



L111 ANSWER 34 OF 36 HCAPLUS
AN 1984:109704 HCAPLUS
DN 100:109704
ED Entered STN: 12 May 1984
TI Remarkable catalytic activity of thermally modified cobalt tetraphenylporphyrin (CoTPP) supported on **titanium dioxide** for nitric oxide-carbon monoxide reaction
AU Mochida, Isao; Iwai, Yasuo; Fujitsu, Hiroshi
CS Res. Inst. Ind. Sci., Kyushu Univ., Kasuga, 816, Japan
SO Chemistry Letters (1984), (2), 217-20
CODEN: CMLTAG; ISSN: 0366-7022
DT Journal
LA English
CC 67-1 (Catalysis, Reaction Kinetics, and Inorganic Reaction Mechanisms)
AB CoTPP supported on fine **TiO2** pretreated by evacuation at 250° exhibits a remarkable activity for the reduction of NO with CO at 100°. The pretreatment modifies the structures of CoTPP so it is insol. in benzene but still soluble in quinoline. Such an activity probably originates from the thermally modified CoTPP of dimeric form with major loss of Ph groups interacting more favorably with the properly dehydrated support.
ST cobalt phenylporphyrin redn catalyst activity; nitric oxide redn carbon monoxide catalyst
IT Reduction catalysts
(cobalt tetraphenylporphyrin-**titania**, for nitric oxide by **carbon** monoxide, **activity** of thermally modified)
IT **14172-90-8**
RL: **CAT (Catalyst use)**; USES (Uses)
(catalysts from **titania** and, for reduction of nitric oxide by **carbon** monoxide, **activity** of thermally modified)
IT 630-08-0, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(reduction by, of nitric oxide, thermally-modified cobalt tetraphenylporphyrin-**titania** catalysts for)
IT 10102-43-9, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)

(reduction of, by carbon monoxide, thermally modified cobalt tetraphenylporphyrin-**titania** catalysts for)
IT **14172-90-8**
RL: **CAT (Catalyst use)**; USES (Uses)
(catalysts from **titania** and, for reduction of nitric oxide by **carbon** monoxide, **activity** of thermally modified)
RN 14172-90-8 HCAPLUS
CN Cobalt, [5,10,15,20-tetraphenyl-21H,23H-porphinato(2-)-κN21,κN22,κN23,κN24]-, (SP-4-1)- (9CI) (CA INDEX NAME)

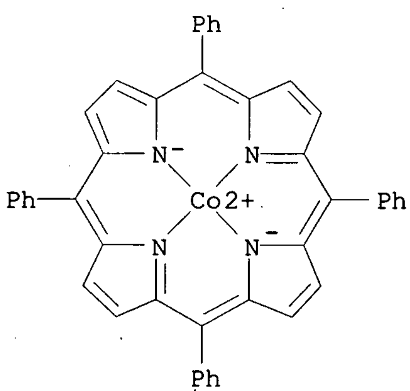


L111 ANSWER 35 OF 36 HCAPLUS COPYRIGHT 2005 ACS on STN
AN 1983:114438 HCAPLUS
DN 98:114438
ED Entered STN: 12 May 1984
TI Catalytic activity of cobalt-tetraphenylporphyrin supported on **titanium dioxide** comparable to Hopcalites for the oxidation of carbon monoxide at room temperature
AU Mochida, Isao; Suetsugu, Katsuya; Fujitsu, Hiroshi; Takeshita, Kenjiro
CS Grad. Sch. Ind. Sci., Kyushu Univ., Kasuga, 816, Japan
SO Chemistry Letters (1983), (2), 177-80
CODEN: CMLTAG; ISSN: 0366-7022
DT Journal
LA English
CC 67-2 (Catalysis, Reaction Kinetics, and Inorganic Reaction Mechanisms)
AB Mol. O2 oxidized CO at 17° over Co-TPP(tetraphenyloprphyrin)-**TiO2** at the rate of 5.3 + 10-3mmol/gcat.min which was comparable to that of a com. Hopcalite, indicating very effective activation of CO on the partially reduced Co ion of the supported complex to attract an O atom from weakly adsorbed mol. O2.
ST cobalt porphyrin oxidn catalyst; carbon monoxide oxidn cobalt catalyst; **titania** cobalt porphyrin oxidn catalyst
IT Oxidation catalysts
(cobalt tetraphenylporphyrin-**titania**, for carbon monoxide at room temperature)
IT Kinetics of oxidation
(of carbon monoxide, on cobalt tetraphenylporphyrin-**titania** catalyst)
IT **13463-67-7**, uses and miscellaneous
RL: CAT (Catalyst use); USES (Uses)
(catalysts, with cobalt tetraphenylporphyrin for oxidation of carbon

monoxide at room temperature)
IT **14172-90-8**
RL: **CAT (Catalyst use)**; USES (Uses)
(catalysts, with **titania support**, for oxidation of **carbon** monoxide at room temperature)
IT 630-08-0, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(oxidation of, at room temperature on cobalt tetraphenylporphyrin-**titania** catalysts)
IT **13463-67-7**, uses and miscellaneous
RL: CAT (Catalyst use); USES (Uses)
(catalysts, with cobalt tetraphenylporphyrin for oxidation of carbon monoxide at room temperature)
RN 13463-67-7 HCAPLUS
CN Titanium oxide (TiO2) (8CI, 9CI) (CA INDEX NAME)

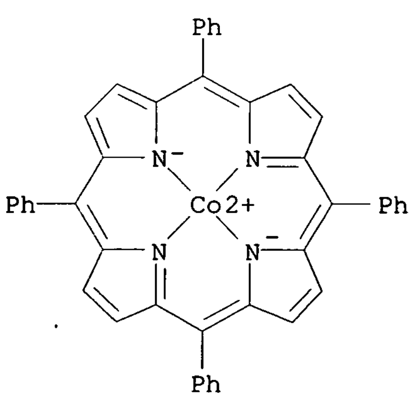
O=Ti=O

IT **14172-90-8**
RL: **CAT (Catalyst use)**; USES (Uses)
(catalysts, with **titania support**, for oxidation of **carbon** monoxide at room temperature)
RN 14172-90-8 HCAPLUS
CN Cobalt, [5,10,15,20-tetraphenyl-21H,23H-porphinato(2-)-κN21,κN22,κN23,κN24]-, (SP-4-1)- (9CI) (CA INDEX NAME)



L111 ANSWER 36 OF 36 HCAPLUS
AN 1982:223892 HCAPLUS
DN 96:223892
ED Entered STN: 12 May 1984
TI Unusual **activity** of **carbon** monoxide on cobalt tetraphenylporphyrin supported by **titania** for the reduction of nitric oxide
AU Mochida, Isao; Suetsugu, Katsuya; Fujitsu, Hiroshi; Takeshita, Kenjiro
CS Res. Inst. Ind. Sci., Kyushu Univ., Fukuoka, 812, Japan
SO Journal of the Chemical Society, Chemical Communications (1982), (3), 166-7
CODEN: JCCCAT; ISSN: 0022-4936

DT Journal
LA English
CC 67-1 (Catalysis, Reaction Kinetics, and Inorganic Reaction Mechanisms)
Section cross-reference(s): 28, 78
AB The catalytic activities of unsupported and **TiO2**-supported meso-tetraphenylporphyrincobalt (I) for the reduction of NO by CO and H and for the decomposition of NO were studied. The reduction of NO by CO at 50° occurred at a much higher rate than the corresponding H reduction The reaction was very rapid at 100° over **TiO2**-supported I, showing the effective activation of CO as well as NO on the partially reduced Co ion of the supported complex.
ST phenylporphyrincobalt catalyst nitric oxide redn; nitric oxide redn catalyst kinetics; hydrogen redn nitric oxide catalyst; carbon monoxide redn nitric oxide catalyst; cobalt tetraphenylporphyrin redn catalyst; **titania** support tetraphenylporphyrincobalt redn catalyst
IT Reduction
(of nitric oxide, by carbon monoxide or hydrogen)
IT Kinetics of reduction
(of nitric oxide, by carbon monoxide or hydrogen, tetraphenylporphyrincobalt-catalyzed)
IT Reduction catalysts
(tetraphenylporphyrincobalt, unsupported and **titania** -supported, for nitric oxide by carbon monoxide and hydrogen)
IT **14172-90-8**
RL: **CAT (Catalyst use)**; USES (Uses)
(catalysts, unsupported and **titania**-supported, for reduction of nitric oxide by carbon monoxide and hydrogen)
IT 630-08-0, reactions 1333-74-0, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(reduction by, of nitric oxide, tetraphenylporphyrincobalt-catalyzed)
IT 10102-43-9, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(reduction of, by carbon monoxide or hydrogen, tetraphenylporphyrincobalt-catalyzed)
IT **14172-90-8**
RL: **CAT (Catalyst use)**; USES (Uses)
(catalysts, unsupported and **titania**-supported, for reduction of nitric oxide by carbon monoxide and hydrogen)
RN 14172-90-8 HCAPLUS
CN Cobalt, [5,10,15,20-tetraphenyl-21H,23H-porphinato(2-)-κN21,κN22,κN23,κN24]-, (SP-4-1)- (9CI) (CA INDEX NAME)



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